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MEMOIR 224

PALÆOZOIC GEOLOGY OF THE TORONTO-HAMILTON AREA, ONTARIO

BY

J. F. Caley

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Palæozoic Geology of the Toronto-Hamilton Area, Ontario

CHAPTER I

INTRODUCTION

GENERAL STATEMENT

During the field seasons of 1936 and 1937 the writer studied and mapped the Palæozoic geology of an area in southern Ontario here designated the Toronto-Hamilton area. The region is bounded on the east and west by longitudes 79°00′ and 80°00′, respectively, and extends from latitude 44°00′ south to the north shore of Lake Erie. It comprises the greater part of the counties of York, Peel, Halton, Wentworth, and Haldimand, as well as a small part of southwestern Ontario county and the whole of Lincoln and Welland counties, and has an area of approximately 2,700 square miles.

The work was undertaken with the object of constructing a geological map and producing a report dealing, as far as possible, with all phases of the bedrock geology. The importance of such an investigation becomes apparent when one remembers that it is with these Palæozoic rocks that the oil, gas, salt, gypsum, building stone, cement, bricks, road metal, etc., in southern Ontario are associated; that these products form the basis of important industries no one can deny. With the exception of the Geological Map of Canada, on a scale of 25 miles to the inch, dated 1866, and its reduction to one-fifth the scale that accompanies Logan's Geology of Canada[1], no complete geological map of that part of the area underlain by Ordovician rocks exists. That part of the area underlain by Silurian and Devonian strata was mapped[2] some 20 years ago; since that time advances have been made in our knowledge of the stratigraphy, so that to bring the mapping of this part of the area up to date seems warranted.

HISTORICAL SKETCH

Prior to the establishment of the Geological Survey of Canada, considerable geological work had been done by the New York Survey. The succession worked out by the New York geologists was, in general, traced across the border into Canada, and the various stratigraphic names then used have subsequently become firmly rooted in Ontario Palæozoic literature.

---

[1] Logan, Sir Wm. E.: Geology of Canada, 1863.
[2] Geol. Surv., Canada, Map. No. 1715, 1918.

One of the earliest geological accounts including the present area was made by Alexander Murray[1]. In 1843 he examined the country between Georgian Bay and Lake Erie. He divided the Palæozoic rocks of this district into ten divisions and correlated them with existing divisions in New York State. Murray's succession is as follows:

	Canada	New York denomination
1	Primary or Metamorphic rocks.....	
2	Grey, buff, or blue limestones.....	Trenton limestone including Black River and Chazy limestone
3	Black, bituminous shales.....	Utica shales
4	Bluish shales and sandstones.....	Hudson River group
5	Red and green sandstones, shales, and marls, including a remarkable band of white sandstone at the top.....	Medina sandstone
6	Limestone and green shale.....	Clinton group
7	Black and dark-coloured slates and shales.	Niagara group
8	Bituminous and magnesium limestones. . .	
9	Red shales.....	Onondaga Salt group
10	Gypseous shales and hydraulic limestone..	
11	Upper limestone.....	Corniferous limestone

Between the years 1843 and 1863, the Reports of Progress of the Geological Survey contain various accounts of the rocks occurring in the Ontario Peninsula. In 1863, Logan's "Geology of Canada" was published; this is essentially a summary of the work of the Geological Survey from its beginning (1842) and contains descriptions of the various formations, including their distribution, lithology, structure, thickness, fossil content, and probable age. The following table will illustrate the sequence of strata recognized at that time.

Devonian	
Portage and Chemung group	
Hamilton formation	
Corniferous formation	Upper Helderberg group
Oriskany formation	
Upper Silurian	
Lower Helderberg group	
Onondaga formation	
Middle Silurian	
Guelph formation	Anticosti group
Niagara formation	
Clinton formation	
Medina formation	
Lower Silurian	
Hudson River formation	
Utica formation	
Trenton formation	
Birdseye and Black River formation	
Chazy-Sillery ? formation	Quebec group
Calciferous-Levis	
Potsdam group	

[1] Murray, A.: Geol. Surv., Canada, Rept. of Prog. 1843, pp. 51-91.

For many years after the publication of the "Geology of Canada," Logan's interpretation of the bedrock was followed, and, although much information was added, no basic changes were made.

Confining our attention to the rocks exposed within the area of this report, we find that previous workers have dealt with them according to the system to which they belong, the Ordovician, Silurian, and Devonian representatives having been investigated more or less independently. The more important works dealing with each system will be briefly mentioned below.

The Twelfth International Geological Congress held in Toronto in 1913 necessitated special study of typical sections. Guide Book No. 5, published by the Geological Survey, describes the Ordovician section on Credit River near Streetsville. According to Parks,[1] the following formations are recognized as comprising the Upper Ordovician.

Richmond
Lorraine
Eden
Utica
Collingwood

The Richmond, Lorraine, Eden, and Utica are the approximate equivalent of the Hudson River of Logan.

In 1916 Foerste[2] described the Upper Ordovician formations of Ontario and Quebec, giving an account of the lithology and faunas of the Lorraine rocks exposed at Toronto and Weston. In 1924 he[3] extended his description of the Upper Ordovician faunas and introduced the term Meaford for the lower Richmond beds.

In 1925 Parks[4] and Dyer[5] described the stratigraphy of the Dundas formation and the Credit River section, respectively. At that time Parks sketched the history of the Middle and Upper Ordovician formational terms and proposed the term Dundas formation for the strata of Lorraine or Maysville time.

In 1928 Parks[6] further studied the rocks lying between the Trenton below and the Dundas above and introduced the term Blue Mountain formation, which he correlated with the Upper Gloucester of Raymond.

In 1936 Wilson[7] wrote a report defining the origin and present use of the Ordovician formational names of Ontario and western Quebec.

In 1936 Coleman[8] described the geology of the north shore of Lake Ontario, but this report adds nothing new to the existing Ordovician nomenclature.

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[1] Parks, W. A.: Geol. Surv., Canada, Guide Book No. 5, 1913, p. 16.
[2] Foerste, A. F.: Geol. Surv., Canada, Mem. 83, 1916.
[3] Foerste, A. F.: Geol. Surv., Canada, Mem. 138, 1924.
[4] Parks, W. A.: Ont. Dept. Mines, Ann. Rept., vol. 32, pt. VII, 1923, p. 89.
[5] Dyer, W. S.: Ont. Dept. Mines, Ann. Rept., vol. 32, pt. VII, 1923, p. 117.
[6] Parks, W. A.: Trans. Roy. Soc., Canada, vol. 22, sec. IV, 1928, p. 39.
[7] Wilson, A. E.: Geol. Surv., Canada, Mem. 202, 1936, pp. 1-20.
[8] Coleman, A. P.: Ont. Dept. Mines, Ann. Rept., vol. XLV, pt. VII, 1936, pp. 37-74.

The Silurian geology of our area has attracted many investigators. Bordering the state of New York as they do at Niagara Falls, these rocks have received the attention of various American as well as Canadian geologists. In addition, several students of the University of Toronto have written theses dealing with specific Silurian formations.

Until about 1912, Logan's "Geology of Canada" constituted the only comprehensive account of the Silurian rocks exposed in this area. In 1912 the Geological Survey commenced a complete revision of these rocks under the direction of M. Y. Williams; this work culminated in publication of Memoir 111 in 1919.[1] It should be stated here, however, that in 1901 Grabau[2] published a report describing the geology at Niagara Falls and vicinity.

In 1913 the Niagara Folio[3] was published by the United States Geological Survey; this work gives a complete description of the formations exposed in the Niagara gorge. In the same year Parks[4] published an account of the Palæozoic section at Hamilton and compared this section with the classification of the New York State geologists.

In 1937 an account of the Guelph and Eramosa formations was published by Shaw.[5] This work traces the history of the Guelph formation, describes its fauna, and divides it into several palæontologic zones. Shaw also proposes a classification and correlation of the Lower and Middle Silurian formations in Niagara Peninsula, Ontario Peninsula, Bruce Peninsula, and Manitoulin Island.

The Devonian rocks of this area, like those of the Silurian and Ordovician, were investigated by Alexander Murray[6] in 1848, and the subdivisions adopted from the New York State classification. These subdivisions appear in Logan's "Geology of Canada" and are reproduced on page 2 of this report. This general classification was followed by subsequent workers, who, however, recognized that the Devonian is in reality much more complex. The term "Corniferous" was applied in New York State to rocks that later proved to be a part of the same formation previously called Onondaga. This term was considered to be more appropriate to the Canadian deposits, and in 1911 Stauffer[7] dropped the term and adopted Onondaga in its place.

In 1915 Stauffer[8] published an account of the Devonian of southwestern Ontario; this report contains the latest and most detailed classification of Devonian rocks occurring in the area of this report.

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[1] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919.
[2] Grabau, A. W.: Bull. N.Y. State Mus., No. 45, 1901.
[3] Kindle, E. M., and Taylor, F. B.: U.S. Geol. Folio No. 190, 1913.
[4] Parks, W. A.: Geol. Surv., Canada, Guide Book 4, 1913, pp. 125-142.
[5] Shaw, E. W.: Trans. Roy. Can. Inst., vol. XXI, pt. 2, 1937, pp. 317-362.
[6] Murray, A.: Geol. Surv., Canada, Rept. of Prog. 1848.
[7] Stauffer, C.R.: Geol. Surv., Canada, Ann. Rept. 1911, p. 271.
[8] Stauffer, C. R.: Geol. Surv., Canada, Mem. 34, 1915, p. 4.

BIBLIOGRAPHY

Alling, H. L.: Petrography of the Niagara Gorge Sediments; Proc. Rochester Acad. Sci., vol. 7, pp. 189-207.

Chadwick, C. H.: Stratigraphy of the New York Clinton; Bull. Geol. Soc. Am., vol. 29, 1918, pp. 327-368.

Chapman, E. J.: Minerals and Geology of Canada, 1864.

Clapp, F. G.: Petroleum and Natural Gas Resources of Canada; Dept. of Mines, Mines Branch, vol. 11, 1915, pp. 97-231.

Clarke, J. M.: Early Devonic History of New York and Eastern North America; N.Y. State Mus., Mem. 9, 1908.

Clarke, J. M., and Ruedemann, R.: Guelph Fauna; N.Y. State Mus., Mem. 5, 1903.

Coleman, A. P.: Geology of the North Shore of Lake Ontario; Ont. Dept. Mines, Ann. Rept., vol. XLV, pt. VII, 1936, pp. 37-74.

DeCew, John: Age of the Oriskany Sandstone; Can. Jour., vol. VII, 1862, pp. 190-193.

Dyer, W. S.: The Stratigraphy and Correlation of the Credit River Section; Ont. Dept. Mines, Ann. Rept., vol. 32, pt. VII, 1923, pp. 117-134.

———The Palæontology of the Credit River Section; Ont. Dept. Mines, Ann. Rept., vol. 32, pt. VII, 1923, pp. 47-88.

Foerste, A. F.: Upper Ordovician Formations of Ontario and Quebec; Geol. Surv., Canada, Mem. 83, 1916.

———Upper Ordovician Faunas of Ontario and Quebec; Geol. Surv., Canada, Mem. 138, 1924.

Goudge, M. F.: Raw Materials for the Manufacture of Rock Wool in the Niagara Peninsula of Ontario; Mines Branch, Dept of Mines, Memorandum Series, No. 50, 1931.

———Limestones of Canada, Part IV, Ontario; Dept. Mines and Resources, Bur. of Mines, No. 781, 1938.

Grabau, A. W.: Guide to Geology and Palæontology of Niagara Falls and Vicinity; Bull. N.Y. State Mus., No. 45, 1901.

———Physical and Faunal Evolution of North America during Ordovicic, Siluric, and Early Devonic Time; Jour. Geol., vol. 17, 1909, pp. 209-252.

Hume, G. S.: Oil and Gas in Eastern Canada; Geol. Surv., Canada, Ec. Geol. Ser., No. 9, 1932, pp. 18-88.

Johnston, W. A.: The Age of the Upper Great Gorge of Niagara River; Trans. Roy. Soc., Canada, vol. 24, 1928, pp. 13-29.

Keele, J.: Preliminary Report on the Clay and Shale Deposits of Ontario; Geol. Surv., Canada, Mem. 142, 1924.

Kindle, E. M.: Notes on the Oriskany Sandstone and Ohio Shale of the Ontario Peninsula; Geol. Surv., Canada, Sum. Rept. 1912, pp. 286-290.

———What does the Medina Sandstone of the Niagara Section include?; Science, vol. 39, No. 1016, 1914, pp. 915-918.

Kindle, E. M., and Taylor, F. B.: Niagara Folio; U.S. Geol. Folio No. 190, 1913.

Laird, H. C.: The Nature and Origin of Chert in the Lockport and Onondaga Formations of Ontario; Trans. Roy. Can. Inst., vol. 20, pt. 2, 1935, pp. 231-304.

Logan, Sir Wm.: Geology of Canada; Geol. Surv., Canada, Rept. of Prog. from its commencement to 1863.

Malcolm, Wyatt: Oil and Gas Fields of Ontario and Quebec; Geol. Surv., Canada, Mem. 81, 1915.

Murray, A.: Report on the District Lying Between Georgian Bay, on Lake Huron, and the Lower Extremity of Lake Erie; Geol. Surv., Canada, Rept. of Prog. 1843, pp. 51-91.

Newcombe, R. B.: Oil and Gas Fields of Michigan; Dept. of Conservation, Geol. Surv. Division, Pub. 38, Geol. Ser. 32, 1933.

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Parks, W. A.: The Stromatoporoids of the Guelph Formation in Ontario; Univ. of Toronto Studies, Geol. Ser. No. 4, 1907.

———Building and Ornamental Stones of Canada; Dept. of Mines, Mines Branch, Pub. No. 100, 1912, vol. 1.

———The Palæozoic Section at Hamilton, Ontario; Geol. Surv., Canada, Guide Book No. 4, 1913, pp. 125-142.

———Ordovician Section on Credit River near Streetsville; Geol. Surv., Canada, Guide Book No. 5, 1913, pp. 15-21.

———The Stratigraphy and Correlation of the Dundas Formation; Ont. Dept. of Mines, Ann. Rept., vol. 32, pt. VII, 1923, pp. 99-116.

———Faunas and Stratigraphy of the Ordovician Black Shales and Related Rocks in Southern Ontario; Trans. Roy. Soc., Canada, vol. 22, sec. IV, 1928, pp. 39-90.

Sanford, J. T.: The Clinton in Western New York; Jour. Geol., vol. 43, 1935, pp. 169-183.

Savage, T. E.: Alexandrian Series in Missouri and Illinois; Bull. Geol. Soc. Am., vol. 24, 1913.

Schuchert, C.: Lower Devonic Aspect of the Lower Helderberg and Oriskany Formations; Geol. Soc. Am., vol. 11, 1900, pp. 241-332.

———The Cataract: a New Formation at the base of the Siluric in Ontario and New York; Bull. Geol. Soc. Am., vol. 24, 1913, p. 107 (abstract).

———Medina and Cataract Formations of the Siluric of New York and Ontario; Bull. Geol. Soc. Am., vol. 25, 1914, pp. 277-320.

Shaw, E. W.: The Guelph and Eramosa Formations of the Ontario Peninsula; Trans. Roy. Can. Inst., vol. 21, pt. 2, 1937, pp. 317-362.

Stauffer, C. R.: The Middle Devonian of Ohio; Geol. Surv., Ohio, Bull. 10, 1909.

———The Oriskany Sandstone of Ontario; Bull. Geol. Soc. Am., vol. 22, 1912, pp. 371-376.

———The Devonian of Southwestern Ontario; Geol. Surv., Canada, Mem. 34, 1915.

Ulrich, E. O.: The Ordovician-Silurian Boundary; Twelfth Inter. Geol. Cong., Canada, 1913, pp. 593-667.

Whiteaves, J. F.: The Devonian System in Canada; Am. Assoc., 1899, pp. 195-223.

Williams, H. S.: Silurian-Devonian Boundary in North America; Geol. Soc. Am., vol. 11, 1900, pp. 333-346.

Williams, M. Y.: An Eurypterid Horizon in the Niagara Formation of Ontario; Geol. Surv., Canada, Mus. Bull. No. 20, 1915.

———The Silurian Geology and Faunas of Ontario Peninsula, and Manitoulin and Adjacent Islands; Geol. Surv., Canada, Mem. 111, 1919.

Wilson, A. E.: A synopsis of the Ordovician of Ontario and Western Quebec and the Related Succession in New York; Geol. Surv., Canada, Mem. 202, 1936, pt. 1, pp. 1-20.

Wilson A. W. G.: Physical Geology of Central Ontario; Trans. Can. Inst., vol. VII, 1901, pp. 139-186.

FIELD WORK

Field work was carried out during the seasons of 1936 and 1937. As the area is for the most part covered with an exceptionally thick mantle of glacial drift, rock exposures are few. All streams, regardless of size, were traversed and any exposures accurately located. Along the Niagara escarpment where roads and streams have made accessible vertical sections of considerable thickness, these were measured instrumentally and recorded in

detail. In this way it was possible to trace the various rock units forming the escarpment for considerable distances. All rock quarries, whether for building stone, road metal, cement, brick making, etc., were visited and accurate levels obtained, in an effort to carry recognizable horizons from one locality to another and so gain information pertaining to the structural geology. Wells drilled for gas and oil, and for which reliable samples were available, were located and their elevations obtained in those cases where this information did not already exist.

ACKNOWLEDGMENTS

Field assistance was rendered in 1936 by M. C. Gardiner and in 1937 by J. W. Mills; both these gentlemen performed their duties in an able and satisfactory manner.

To Colonel R. B. Harkness, Ontario Natural Gas Commissioner, thanks are here rendered for various drilling records.

The writer also wishes to acknowledge his gratefulness for courtesies extended by the owners of the many quarries visited, and especially to the officials of the Canada Gypsum, Lime, and Alabastine Company who kindly conducted him through the Caledonia mine.

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CHAPTER II

GENERAL CHARACTER OF THE AREA

The area lies within the western part of the St. Lawrence lowland. The northeasterly facing Niagara escarpment, extending from the northwest corner of the area southward to Dundas and thence eastward to Niagara River at Queenston, divides the region, topographically, into two parts. The escarpment is an erosional feature, owing its origin and preservation to the fact that it is composed of soft, easily eroded shales below, which are capped by hard and more resistant limestones and dolomites. The beds dip at a low angle into the escarpment and the weathering of the soft shales undermines the harder upper layers, which break off and so preserve the steep front face of the escarpment. At the west end of Lake Ontario the escarpment rises abruptly from about 400 feet to 650 feet above sea-level. Throughout the entire area there is, in general, a difference in elevation of approximately 250 feet between the country "below" and "above" the escarpment. The breadth of the escarpment varies from place to place, but almost everywhere the Lockport dolomite forms an upper vertical face. Below this capping rock the less resistant formations form a slope, the steepness of which varies in accordance with the degree of resistance offered to erosion by the different rock layers.

The country "below" the escarpment rises gradually northward from the level of Lake Ontario (245 feet) to an elevation of 1,300 feet in the northwest part of the region. The surface is for the most part undulating, but becomes more rugged toward the north with steep hills and deep valleys formed by terminal moraines.

The region "above" the escarpment and north of the town of Dundas rises northward from an elevation of about 800 feet to about 1,550 feet. The surface is rolling, but with low relief. From the escarpment south to Lake Erie, the country exhibits a gentle slope from about 800 feet above sea-level at Ancaster to 572 feet on Lake Erie. The glacial drift is comparatively thin here and the surface appears quite flat, reflecting, in a measure at least, the structure of the underlying bedrock.

The entire area has been glaciated and the bedrock is covered by a variable thickness of drift. This drift controls the topography so that the present surface, except in restricted localities, does not express the structure of the underlying rock. The drift is thickest in the northern part of the area, where borings for gas, oil, and water show depths up to 400 feet before reaching bedrock. A well about 2 miles west of Thornhill passed through 650 feet of glacial material.[1] Between Lake Ontario and Lake Erie the drift is comparatively thin. In many localities the bedrock is almost at the surface, so that at these places the present topography is largely controlled by the bedrock structure.

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[1] Coleman, A. P.: Ont. Dept. Mines, Ann. Rept., vol. XLI, pt. VII, 1932, p. 27.

Lake Erie and Lake Ontario receive the drainage of the entire area. That part bordering the north shore of Lake Ontario is dissected by a dendritic system of small streams flowing in a southeasterly direction into Lake Ontario. At their upper reaches, where terminal and interlobate moraines constitute great thicknesses of drift, these streams have not cut through to the bedrock. In the lower part of their courses most of the streams have cut into the bedrock, and in some instances present deeply incised valleys exposing rock sections up to 50 feet in thickness. Exposures may thus be seen on Rouge, Humber, and Credit Rivers, and on Etobicoke, Oakville, and Bronte Creeks.

The region between Lake Ontario and Lake Erie is drained by three major streams, Grand, Welland, and Niagara Rivers, and their many tributaries. Grand River is the longest of the three; it rises in Dufferin county and flows in a southerly direction to the city of Brantford where it turns southeasward and empties into Lake Erie at Port Maitland. Throughout the part of its course within the present area, Grand River is a sluggish stream, the river bed is only a few feet below the level of the surrounding country and the average gradient is less than one foot a mile. Welland River rises in Wentworth county and for the first half of its course flows in a southeasterly direction parallel to Grand River. A few miles above the city of Welland, it turns northeastward and enters Niagara River at the town of Chippawa. The stream bed is nowhere over 25 feet below the level of the surrounding country and the average gradient is approimately 2·5 feet a mile over its entire length. Nowhere has the river cut through the glacial drift and exposed the underlying bedrock.

Niagara River forms the east boundary of that part of the area lying south of Lake Ontario. It connects Lake Erie and Lake Ontario and carries the discharge of the four upper Great Lakes. From Buffalo, where it leaves Lake Erie, to Niagara-on-the-Lake where it enters Lake Ontario, a distance of some 36 miles, the river descends about 326 feet. From whatever view-point we consider Niagara River, whether with regard to its importance in the Great Lakes drainage system, to its value as a source of power, to its geological history, or to its scenic beauty, it is undoubtedly one of the most interesting and important waterways in America.

It is not within the scope of this report to discuss the various features of Niagara River; our object is rather to investigate the rocks that it so admirably exposes to view. The reader is referred to the following works, which contain detailed accounts of the history and evolution of the river:

"The Preservation of Niagara Falls."
Final Report of the Special International Niagara Board, 1930.
Spencer J. W. W.; "The Falls of Niagara"; Geol. Surv., Canada, Pub. No. 970, 1905.
Taylor, F. B.: "Niagara Falls and Gorge"; Geol. Surv., Canada, Guide Book No. 4, 1913.

The area lies within what is probably the most thickly settled part of Canada and is, therefore, easy of access. Various types of agriculture form the chief occupation, dairying and fruit growing occupying an important place in that industry. Considerable manufacturing is also carried on, with principal centres at Toronto, Hamilton, St. Catharines, Niagara Falls, and Port Colborne. In Haldimand and Welland counties considerable natural gas is produced, and gypsum is mined in the vicinity of Caledonia.

CHAPTER III

STRATIGRAPHY

GENERAL STATEMENT

The entire area is underlain by Palæozoic sedimentary strata, the Ordovician, Silurian, and Devonian systems each being represented. The sediments lie upon the unevenly eroded surface of the Precambrian, which consists of igneous and metamorphic rocks and outcrops a short distance north of the area as the Canadian Shield. At no one locality is the total thickness of the sediments obtainable, but an examination of samples from borings at different places has yielded the following information: the maximum total thickness, exclusive of basal arkosic beds, is about 2,921 feet; of this, 2,005 feet are Ordovician, 818 feet are Silurian, and 96 feet represent the Devonian formations present. The basal arkosic beds have a thickness ranging from 0 to 45 feet.

The Ordovician consists essentially of limestones and dolomites in the lower part with great thicknesses (1200± feet) of shale, with thin limestone bands, forming the upper part. The youngest Ordovician is the Queenston red shale, which forms the base of the Niagara escarpment extending from Niagara River to the northern extremity of the area.

Ordovician strata underlie all that part of the area northeast of the Niagara escarpment and outcrop on Rouge, Humber, Credit, Oakville, and Bronte Rivers, as well as at various localities along both the north and south shores of Lake Ontario. Their extension beneath younger strata throughout the remainder of the area is indicated by well borings.

The lower Silurian rocks consist of sandstone and shales (Medina formation); the Middle Silurian is composed essentially of dolomite (Niagaran age); and the Upper Silurian consists of shales and interbedded, platy dolomites with gypsum and anhydrite (Cayugan age).

The Lower and Middle Silurian rocks, excepting the Guelph formation, constitute the Niagara escarpment and outcrop along its front. Silurian strata underlie all the area south of the escarpment except for a narrow strip along the north shore of Lake Erie where Devonian rocks immediately underlie the drift. Extension of the Silurian beneath these younger strata is shown by well borings.

The Devonian representatives consist of sandstone (Oriskany) and limestone (Onondaga). They occupy the extreme southern part of the area, forming a narrow band from 1 to 8 miles wide along the north shore of Lake Erie. Exposures may be seen along the lake shore and in numerous quarries where the overburden has been removed; apart from these occurrences, exposures are extremely rare.

The Palæozoic rocks of the Toronto-Hamilton area have suffered no strong deformation. Their attitude is a gentle dip toward the southwest away from the Canadian Shield. In the Niagara Peninsula the dip is more nearly south and averages about 30 feet a mile. As a result of this

attitude the different formations occur in belts that north of Lake Ontario trend northwestward and south of Lake Ontario trend more nearly east-west. The detailed structural geology will be treated in a later chapter.

In mapping the Palæozoic strata of the present area, emphasis has been laid upon formational units defined with respect to types of sedimentation and geological history rather than solely with respect to their contained faunas. In some cases, previous practice has been to subdivide an unbroken and nearly or completely homogeneous series of strata according to faunal succession; it is neither practicable nor possible to map such subdivisions. For example, the great thickness of shales lying between the Trenton below and the Richmond above have been subdivided purely on palæontological grounds into many zones. These zones cannot be mapped; only those divisions that can be separated lithologically appear on the accompanying map. It will be readily understood, therefore, that cases may occur where the contained fauna will be found to transgress the boundaries of a formation that is defined on lithological and historical grounds. Indeed, if organic evolution be admitted, the above condition must of necessity follow. A formation as used in this work refers to a lithological unit; it is a product of continuous sedimentation, is lithologically uniform, and may consist of one variety of sediments or of two or more varieties of related sediments alternating in regular or irregular manner. Formational characters are due to geological processes; formations are natural divisions. Map-units are purely artificial, being defined by the conditions under which the area is mapped. Several formations may be grouped into one map-unit, but the tendency should be for formations and map-units to closely approach one another.

On the geological map accompanying this report, the Medina, Clinton, and Rochester formations have been combined into a single map-unit. These strata occur along the front of the Niagara escarpment, and their flat-lying attitude and relative thinness prohibit their representation separately on the scale here employed. The Bertie and Akron cannot be separated with any accuracy in the field, and, therefore, have also been combined into a single map-unit.

All available and reliable samples from bore-holes have been examined and logged. By this means an attempt has been made to trace the underground extent of the various formations as well as any lithologic changes that may occur from one locality to another.

Table of Formations

System	Formation	Member	Thickness
			Feet
Devonian	Onandaga		28–100
	Oriskany		0–20
	Bertie-Akron		35–56
	Salina		300–420
	Guelph		130±
	Lockport	Undifferentiated	117±
		Gasport	5–14
		DeCew	2–12?
Silurian	Rochester		0–63
	Clinton	Irondequoit	3–7?
		Reynales	16
		Sodus	0–3
	Medina	Thorold	2–8
		Grimsby	0–49
		Cabot Head	3–?
		Manitoulin	25±
		Whirlpool	8–25
	Queenston		400–340
	Meaford		120±
Ordovician	Dundas		550±
	Billings		100–250

DESCRIPTIONS OF FORMATIONS

BILLINGS FORMATION

Definition. The earliest Ordovician strata exposed within the map-area are a series of dark shales that have formerly been referred to as the Gloucester formation, but for which we propose to use the name Billings formation, a term proposed and used by Alice E. Wilson on the geological map of Ottawa and vicinity. The term Gloucester was introduced by

Raymond[1] in 1916, for some 50 to 75 feet of dark brown to black shales occurring at Ottawa and described as resting on 25 to 30 feet of interstratified limestone and dark shale forming the Collingwood formation. The latter term, Collingwood formation, had been proposed by the same author[2] and applied to less than 50 feet of alternating layers of limestone and shale resting on the Trenton limestones at Ottawa. The Collingwood was defined in faunal terms and thereby embraced a part of the immediately overlying series of shales. The term Eastview is being used by Miss Wilson as a formational name to designate the thin series of alternating limestone and shale overlying the Trenton limestone at Ottawa. The Eastview embraces most of the strata previously named Collingwood, but the uppermost Collingwood beds as they are shales are now considered to form the lower part of the shale series to which the name Billings is applied. The thin series of alternating limestone and shale overlying the Trenton at Ottawa and called the Easview formation is apparently absent in the present map-area, the Trenton there being directly overlain by a series of dark shales essentially similar to the Billings formation; the latter formational name is, therefore, used in this report to designate the strata between the Trenton below and the Dundas formation above.

Distribution. Billings shales are exposed on both Rouge and Little Rouge Rivers a short distance above highway No. 2. They also outcrop on Duffin Creek, where they may be seen on lot 15, cons. II and III, and on lot 13, con. IV, Pickering tp. No other exposures of this formation occur in the area, but the formation underlies at least all that part east of a line drawn from the mouth of Rouge River to Lemonville. Boring records show the formation to be present beneath younger strata throughout the entire area.

Lithology and Contacts. As exposed, the Billings is a thinly and evenly bedded, soft, bituminous shale that weathers dark grey, bluish, or even yellowish. On fresh surface it is dark grey to nearly black, with distinct brown and green shades in many places. Much pyrite occurs in the darker parts, many of the fossils having been partly or wholly replaced by that mineral. In well cuttings the formation presents a uniform appearance, being medium to dark grey and containing brown, bituminous material that increases in amout downward through the succession. This uniformity prevails throughout the entire area.

The formation lies between the Trenton below and the Dundas above. Neither the upper nor the lower contact is exposed in the field; delimitation, therefore, is a matter of some difficulty. The shales immediately overlying the Trenton are black and bituminous, and previously have been called Collingwood. They and the overlying somewhat greyer shales, which compose the greater part of the Billings formation, are referred to as "Utica" by drillers.

The upper limit of the Billings is difficult to place, and here, again, well cuttings must be relied upon. The formation is continuous with the overlying Dundas, the lower part of which is lithologically similar to the

[1] Raymond, P. E.: Mus. Comp. Zool., Bull. vol. 56, p. 255.
[2] Raymond, P. E.: Geol. Surv., Canada, Sum. Rept. 1911, p. 354.

upper part of the Billings. So far as known the Dundas formation contains no bituminous matter, and in logging the well samples we have placed the upper limit of the Billings at the highest occurrence of bituminous matter. In many of the well samples this division comes a few feet below calcareous and arenaceous samples that in all probability represent the limy and sandy bands known from exposures to occur toward the base of the Dundas formation.

Outside the map-area, on Georgian Bay, "Utica" strata are seen to grade upward without petrographic break into the Dundas formation. As the genus *Triarthrus* is typically "Utica" it has been the practice at this locality to begin the Dundas immediately above the highest occurrence of that genus.

Thickness. Samples from several wells penetrating the strata at widely separated localities indicate a range of thickness from 116 to 250 feet. The thickness appears to increase from east to west across the area.

Fauna and Correlation. The following is a list of the fossils from the Billings shales on Rouge River as identified by Parks.[1]

Leptograptus flaccidus (Hall)
Climacograptus rougensis Parks
Leptobolus insignis Hall
Prolobella cf. *corrugata* Rued.
Ctenodonta filistriata Ulrich
Clidophorus planulatus Hall
Clidophorus cf. *foerstei* Rued.
Lyrodesma conradi Ulrich
Raphistomina sp. indet.
Geisonoceras tenuistriatum (Hall)
Cf. *Cycloceras persculptum* Rued.
Protokionoceras sp.
Triarthrus canadensis Smith
Triarthrus spinosus rougensis Parks
Triarthrus glaber Billings
Cryptolithus bellulus

In addition to this list, specimens of *Glossograptus quadrimucronatus* were observed by the writer in the drift along the shore of Lake Ontario in Pickering township.

The upper Billings shales (Gloucester) fall within the time of the upper Utica (Deer River) and Atwater Creek shales of New York and are correlated with these beds by Ruedemann.[2] *Triarthrus spinosus, T. glaber, T. becki, Leptograptus flaccidus,* and *Glossograptus quadrimucronatus* are characteristic fossils of the Gloucester at its type locality at Ottawa. *Triarthrus spinosus* and *Leptograptus flaccidus* occur in the typical Utica at Holland Patent and *Glossograptus quadrimucronatus* is found in the overlying Atwater Creek shales.

Parks[3] refers the Rouge River strata to the upper Gloucester and correlates them with the Blue Mountain formation of Georgian Bay; these beds he makes the equivalent of at least part of the Whetstone Gulf formation of New York.

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[1] Parks, W. A.: Trans. Roy. Soc., Canada, vol. 22, 1928, p. 56.
[2] Ruedmann, R.: N.Y. State Mus., Bull. 258, 1925, p. 64.
[3] Parks, W. A.: Op. cit., p. 60.

The upper part of the Billings may also be compared with the Sheguiandah formation on Manitoulin Island. Species of the genus Triarthrus seem to be the best diagnostic fossils of both the upper part of the Billings and of the Blue Mountain formation. According to Caley[1] *Triarthrus canadensis* is the sole representative of the genus on Manitoulin Island. This species is lacking in the Blue Mountain and in the upper Billings of Ottawa, but is present in the brownish Billings shales of Rouge River.

DUNDAS FORMATION

Definition. Lying between the Billings below and the Queenston red shale above at Toronto and vicinity is a series of shales and interbedded limestones and sandy beds. Chiefly on a basis of fauna, this succession has been divided into an upper group of Richmond age and a lower group referable to Lorraine or Maysville time. For the lower division Parks[2] proposed the term Dundas formation.

Distribution. The Dundas formation has an areal extent of about 500 square miles and forms a belt trending northwest across that part of the area north of Lake Ontario. Considering the extensive area underlain by these rocks, actual exposures are few; they are practically confined to the southern one-third of the belt. The most continuous outcrops occur along Humber River from Weston to Lake Ontario; along Mimico Creek from Islington to highway No. 2; along Etobicoke Creek from Mount Charles to Lake Ontario; and along Credit River in the vicinity of Erindale. In addition to the above, more or less isolated exposures may be seen on the west branch of Humber River below Clairville and on lots 6, 7, and 8, con. IX, Toronto Gore tp. The strata may also be viewed at various quarries such as the Don Valley Brick yard, The Mimico Prison quarry, the Booth Brick Company, and at an old excavation near Lake Ontario at Port Credit.

Drilling records indicate that the Dundas extends beneath younger strata throughout the entire area.

Lithology and Contacts. As seen at outcrops, the Dundas formation is prevailingly a greyish blue, thinly bedded shale, which weathers somewhat lighter. There is, however, some variation from compact, blue, argillaceous shale to buff or yellowish, silty, and frequently arenaceous, rock. The lower 70 feet or so, seen at the Don Brick quarry consist of bluish and grey, soft shale with frequent, thin, hard bands mostly calcareous in composition. Overlying, and exposed chiefly on Humber River, is at least 250 feet of grey shale with both limestone and arenaceous layers throughout. Still higher, and outcropping on the lower reaches of Credit River, is an additional 50 feet of shale, which becomes decidedly silty and greenish and yellowish in colour with occasional thin limestone layers.

The hard bands, both calcareous and arenaceous, are everywhere of limited extent both horizontally and vertically. They rarely exceed one foot in thickness, the average being only a few inches. As seen in various

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[1] Caley, J. F.: Geol. Surv., Canada, Mem. 202, p. 34.
[2] Parks, W. A.: Ont. Dept. Mines, Ann. Rept., vol. 32, pt. 7, 1923, p. 94.

quarries, the hard layers are not as a rule continuous, but pinch out laterally presenting a lens-like appearance. They cannot, therefore, be used as horizon markers or for structural purposes. The limestone layers, crowded with fossils, are thinner and more continuous than the arenaceous bands. The latter, thicker and more lensy, rarely contain fossils.

In bore-hole samples the Dundas formation appears as a thick mass of shale. The limestone and sandstone bands seen on the outcrop are so thin that in 5-foot well samples their presence is merely indicated by a calcareous and arenaceous content of various of the shale samples. Although in the occasional well shades of green are shown by samples from the upper part of the formation, the prevailing colour is medium grey and is uniform throughout the entire thickness. Well samples show the formation to be remarkably uniform in both lithology and colour through the whole area.

The lower limit of the Dundas has already been discussed; it is here placed above the highest occurrence of bituminous matter contained in grey shale.

The upper boundary of the Dundas formation is not easy to place; there is no sedimentary break and the lower part of the Meaford is essentially similar lithologically to the upper part of the Dundas. According to Dyer[1], on Credit River a 30-foot band of barren shale occurs between the Dundas and Meaford. Above this band the faunal assemblage is decidedly Richmond, and few species are common to the strata above and below the barren zone. Dyer considers the barren zone as the boundary between the Dundas and Meaford.

Although the Dundas-Meaford contact has admittedly been drawn on faunal evidence, lithological differences gradually appear as we pass upward through the Meaford strata. These rocks become increasingly more calcareous, limestone and calcareous sandstone beds increasing in number and thickness and Anthozoan reefs becoming prominent. It is thus seen that in general it is possible to separate the two formations in the field on lithological grounds even though a definite line of contact cannot be drawn without the aid of fossils.

The increase in calcareous material passing upward in the Meaford is readily detectable in well samples. On this basis the two formations can be separated in bore-holes. However, because the lower Meaford and upper Dundas as based on fossil evidence are composed of similar shales, the exact line of separation between the two formations cannot be placed with any accuracy by this method. It has been the practice of drillers to combine the Meaford and Dundas and report their occurrence under the term Hudson River or Lorraine.

Thickness. It is not possible to measure the thickness of the Dundas formation by direct methods. The base of these strata is nowhere exposed. The lowest representatives can be seen in Don Valley Brick yard, and between this quarry and Rouge River, where Billings shale is exposed, there is an interval of 14 miles in which no outcrops occur.

The most reliable figures as to thickness are to be gotten from bore-holes. As the exact position of the upper contact of the Dundas cannot be

[1] Dyer, W. S.: Ont. Dept. Mines, Ann. Rept., vol. 32, pt. 7, 1923, p. 120.

placed in well samples, the combined Meaford and Dundas thickness is here recorded. The measured thickness of Meaford on Credit River is approximately 115 feet, so that by deducting this amount from the figures quoted below, thicknesses of the Dundas may be obtained. The following combined Meaford-Dundas thicknesses are from well samples examined by the writer.

County	Township	Feet
Halton	Nassagaweya	640
Wentworth	West Flamborough	594
Wentworth	Beverly	600
Wentworth	Ancaster	590
Lincoln	Grantham	674
Wellington	Puslinch	670
Wellington	Eramosa	640

Fauna, Subdivision and Correlation. A detailed and exhaustive analysis of the Dundas fauna has been made by Parks[1], who reports 187 species. The fauna is general throughout the entire formation, but Parks[2] finds certain species to be restricted to narrower zones whereas others differ greatly in their relative development at different horizons in the formation. Accordingly, Parks has subdivided the Dundas into four members or palæontological zones; these, with their characteristic fossils are listed below, in ascending order.

4. Rosedale member (*Whitella* zone). This zone constitutes the lower 10+ feet in the Don Brick quarry.

Cuneamya scapha brevior
Colpomya faba pusilla
Clidophorus planulatus
Archinacella pulaskiensis
Actinoceras crebriseptum
Modiodesma modiolare
Isotelus maximus
Mastigograptus gracillimus
Bythopora arctipora
Byssonychia radiata
Dalmanella rugostriata
Whitella goniumbonata
Whitella acutiumbonis
Whitella lata
Whitella parksi
Whitella impressata
Whitella radiata
Prasopora donensis

3. Danforth member (*Plectambonites sericeus* zone) constitutes about 51 feet of shales above the Rosedale member and exposed in the Don Brick quarry.

Prasopora donensis
Stigmatella vulgaris
Arthropora shafferi
Atactoporella maculata
Chiloporella flabellata
Hallopora dalei subalta
Hallopora onealli danforthensis
Leptaena rhomdoidalis cf. *invenusta*
Plectambonites sericeus
Plectambonites rugosus
Trematis millepunctata
Whitella impressata
Cymatonota pholadis
Rhytimya colemani
Glossograptus sp.
Dendrograptus sp.
Inocaulis yorkensis
Climacograptus putillus
Climacograptus cf. *typicalis*
Cryptolithus tessellatus
Dalmanella rugostriata
Conularia formosa

[1] Parks, W. A.: Ont. Dept. Mines, Ann. Rept., vol. 32, pt. VII, p. 100 (1923).
[2] Parks, W. A.: Op. cit., p. 106.

2. Humber member. This member includes at least 282 feet of shales overlying the Danforth member and is exposed chiefly on Humber River from Lake Ontario to Weston.

Arthraria biclavata
Byssonychia alveolata
Clidophorus cf. *faberi*
Clidophorus obliquus
Ctenodonta cf. *cingulata*
Cymatonota lenior
Cymatonota parallela
Dermatostroma scrabrum
Diplograptus foliaceus vespertinus
Leptotrypa expansa
Licrophycus flabellum
Lingula westonensis
Liospira helena
Mesotrypa distincta
Modiolopsis postplicata
Modiolopsis ovata
Modiolopsis striata
Modiolopsis cf. *valida*
Orthoceras lamellosum
Orthodesma subangulatum
Palaeophycus virgatus
Psiloconcha inornata
Psiloconcha subrecta
Pterinea cincinnatiensis
Rafinesquina mucronata torontonensis
Sinuites cancellatus
Spatiopora varians
Aspidopora cf. *areolata*
Stigmatella catenulata
Stigmatella personata
Stigmatella crenulata
Stigmatella intermedia
Trichophycus venosum
Trematis ottawaensis
Whiteavesia pholadiformis
Whitella hindi
Whitella torontonensis

1. Credit member. This member comprises 50 feet of shale and silty strata overlying the Humber member, and is well exposed on Credit River near Erindale.

Hallopora onealli creditensis
Stigmatella sessilis crassa
Zygospira modesta
Byssonychia radiata
Clidophorus planulatus
Cymatonota cf. *lenior*
Ischyrodonta unionoides
Modiolopsis borealis
Modiolopsis concentrica
Pterinea demissa
Whiteavesia pholadiformis
Whitella cf. *hindi*
Whitella sp.
Actinoceras crebriceptum
Isotelus cf. *maximus*

The distribution of the Dundas fauna (annelids and conodonts omitted) is indicated by the following table.[1]

	Species
Only in the Pulaski or Lorraine of New York	10
Only in the Maysville of Ohio basin	25
In both Richmond and Maysville, but not in New York	7
Only in Richmond of Ohio basin	18
In both Lorraine or Pulaski and in western basin	24
Only in the Eden	6
Only in Eastern Canada as determined by Foerste	10
New species or varieties	29
Long range forms, Trenton, Silurian, etc	13

In view of the above faunal analysis, it is not possible to correlate the Dundas formation with either the New York Lorraine or the Ohio Maysville. However, both the fauna and stratigraphic position of the Dundas indicate Maysville-Lorraine time.

[1] Parks, W. A.: Ont. Dept. Mines, Ann. Rept., vol. 32, pt. 7, 1923, p. 101.

MEAFORD FORMATION

Definition. The term Meaford was proposed by Foerste[1] and defined so as to include all the strata regarded by him as of Waynesville age. The type locality is on the south of Georgian Bay, and as thus defined the formation occupies a position between the Dundas below and the Queenston above.

It is worthy of note that Foerste, when introducing the term, lists it as the Meaford member of the Richmond formation and yet, when defining the strata included therein, he refers to it as the Meaford formation.

In his work on Credit River, Dyer[2] uses the term Richmond formation and divides it into four members; these, in ascending order, are Erindale, Streetsville, Meadowvale, and Queenston. It is thus seen, that on Credit River the Meaford formation of Foerste includes the first three of the above-mentioned members. In the present work, it is thought best to employ the term Richmond in a time sense and to include therein two formations, the Meaford and Queenston.

Distribution. The Meaford formation has an areal extent of about 100 square miles; it underlies a narrow belt of country from 1 to 3 miles wide and stretching in a northwesterly direction from Oakville on Lake Ontario to the north boundary of the map-area.

With the exception of a single outcrop on Humber River, on lot 1, con. IV, Adjala tp., the exposures of Meaford strata are confined to the southern half of the belt underlain by these rocks. They can be best seen on Credit River at and in the vicinity of Streetsville; on Bronte Creek just above the Canadian National Railways bridge north of Oakville; on a small creek near Meadowvale (lot 9, cons. I and II W., Toronto tp.); along Etobicoke Creek throughout cons. II and III, Toronto tp.; and on several small streams in the general vicinity of Oakville.

Drilling records indicate that the Meaford formation extends beneath younger strata throughout the entire area.

Lithology. As viewed in outcrops, the Meaford strata, as a whole, consist of grey to bluish and even brownish, fissile shale with interstratified hard layers that vary in composition from impure calcareous sandstone and arenaceous shale to rather pure crystalline limestone. Shallow water conditions are indicated by the presence of ripple-marks as well as by the discontinuity and lensy character of the hard beds.

The lower 50 or 60 feet of the formation is chiefly shale, but contains frequent limestone and calcareous sandstone beds throughout; it is well exposed on Mullet Creek and on the west side of Credit River about one-half mile below the Toronto Milling Company mill at Streetsville. This more shaly phase is followed by about 20 feet of strata in which the limestone bands are dominant though separated by relatively thin intervals of grey shale. This succession contains a Stromatocerium reef, which averages about 3 feet in thickness and is well exposed on the east side of Credit River at Streetsville on lot 3, con. IV W., Toronto tp. The upper 30 feet of the

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[1] Foerste, A. F.: Geol. Surv., Canada, Mem. 138, p. 7 (1924).
[2] Dyer, W. S.: Ont. Dept. Mines, Ann. Rept., vol. 32, pt. 7, p. 118.

Meaford formation begins with a columnaria reef, which varies from 2 to 5 feet in thickness; it is well exposed on the west side of Credit River immediately above Castlers Bridge, on lot 1, con. IV W., Toronto tp. From this reef to the top of the formation the strata are chiefly clay shales with occasional argillaceous sandstone, as well as impure limestone, bands throughout.

In well samples the Meaford formation closely resembles the underlying Dundas in appearance. It is a grey, bluish, and in some samples a greenish shale, but with a much greater calcareous and arenaceous content due to the more frequent occurrence and more concentrated zones of limestone and sandy beds.

Meaford-Queenston Contact. The boundary between the grey Meaford and the overlying red Queenston is exposed at only two localities in the map-area. At both of these, the contact is more or less gradational through a thickness of from 15 to 20 feet. Although the typical grey shale of the Meaford gives place fairly abruptly to the red and greenish, mottled, sandy shale typical of the Queenston, the interbedded grey and reddish limestone layers continue to enclose Meaford fossils for some distance above the highest occurrence of the grey shale. As we ascend in the Queenston the hard layers rapidly decrease in both number and thickness and finally disappear leaving the strata dominantly a red, argillaceous shale.

Because the red Queenston shale forms a lithologic unit, the Meaford-Queenston contact is placed at the lowest or first appearance of the red shale even though fossils typical of the Meaford continue some distance above this horizon. The following section will indicate the character of this contact as seen on a small tributary of Credit River, on lot 9, con. I W., Toronto tp.

	Thickness	
Queenston Shale	Feet	Inches
Alternation of purplish limestone, in beds up to 4 inches thick, with red shale; *Byssonychia* sp. common	4	0
Red shale with frequent ½- to 1-inch hard limestone layers.	5	6
Hard, dense, purplish and green mottled limestone; *Lingula* sp., Ostracods	0	8
Red shale with green colour bands and mottlings; *Deprenella ?* sp.	5	6
Red shale with greenish grey, red-stained, dense limestone in beds from 1 to 3 inches thick; *Zygospira* sp., *Byssonychia* sp., Bryozoa, Ostracoda (*Deprenella ?* sp.).	4	0
Meaford Formation		
Hard, bluish grey limestone enclosing *Byssonychia* sp., *Modiolopsis* sp., *Platystrophia* sp.	0	6
Alternation of dense, grey to bluish, arenaceous limestone in beds from 1 to 3 inches thick with 3- to 4-inch partings of grey shale	2	6
Grey, chocolate-weathered, dense limestone showing ripple-marks and enclosing Bryozoa, *Hebertella* sp., *Strophomena* sp., *Zygospira* sp., Crinoid columns	1	2
Hard, lenticular, and ripple-marked, limy beds with grey shale parting; *Columnaria* sp., *Tetradium* sp.	2	1

In well samples the change in colour from red to grey in passing from the Queenston to the Meaford is quite sharp. This contact, therefore, is readily detected by the drillers.

Thickness. The thickness of the Meaford formation is obtainable by direct measurement. With the exception of a covered interval of about 10 feet, the entire formation outcrops on Credit River and its tributaries. The approximate thickness as measured in the vicinity of Streetsville is 115 feet.

Fauna, Subdivision and Correlation. A detailed study of the Meaford fauna has been made by Dyer[1] who lists a total of 101 species, 23 of which are therein described as new. On a basis of this fauna, Dyer has subdivided the Meaford strata into three members or palæontological zones; these, with their characteristic fossils, are listed below, in ascending order.

Erindale member (*Strophomena varsensis* zone). This member comprises the lower 65 feet of the Meaford formation.

Catazyga headi
Hebertella occidentalis
Rafinesquina alternata
Strophomena varsensis
S. planumbona erindalensis
Zygospira modesta
Byssonychia radiata
Ctenodonta cingulata
Pterinea demissa
Whiteavesia pholadiformis
Calloporella vacua
Hallopora subnodosa
Heterotrypa definita
H. prolifica
Rhinidictya parallela
Stigmatella hybrida
Lophospira bowdeni
Clidophorus planutalus
Hallopora onealli

Streetsville member. This member comprises about 20 feet of strata and is characterized by a Stromatocerium reef. Dyer recognizes four palæontological zones within this member; these, with their typical fossils, are as follows:

Zone of *Ischyrodonta misneri*
Ischyrodonta misneri
Byssonychia robusta
Platystrophia clarksvillensis
Byssonychia grandis
Opisthoptera fissicosta
Bellerophon cf. *mohri*
Zone of *Homotrypa streetsvillensis*
Homotrypa streetsvillensis
H. creditensis
H. communis
Stigmatella incrustans
Heterotrypa simplex
Amplexopora solitaria
Monticulipora parasitica multipora
Mesotrypa patella
Zygospira modesta
Stromatocerium reef
Columnaria alveolata
C. calicina
Tetradium approximatum
Hallopora nuculosa
Zone of *Bythopora meeki*
Bythopora meeki
Atactoporella densa
Homotrypella dubia
H. hospitalis
Batostoma cf. *varians*
Byssonychia grandis

[1] Dyer, W. S.: Ont. Dept. Mines, Ann. Rept., vol. 32, pt. VII, p. 47 (1923).

Meadowvale member. This member begins with the Columnaria reef and includes the upper 30 feet of the Meaford formation. Characteristic fossils in the reef are as follows:

Columnaria alveolata
Tetradium
Stromatocerium huronense
Rhombotrypa quadrata
Constellaria polystomella
Calapoecia cribriformis
Streptelasma rusticum

The following fossils occur above the Columnaria reef and up to the top of the member.

Whiteavesia pholadiformis
Modiolopis concentrica
Clidophorus fabulus
Zygospira modesta
Rafinesquina alternata subcircularis
Hebertella occidentalis
Homotrypa hospitalis
Platystrophia cf. *clarksvillensis*

The Meaford formation is correlated with the Meaford on Workman Creek (Georgian Bay), and also with the Meaford of Manitoulin Island. Both the Erindale and Streetsville members of Dyer are recognized on Workman Creek by Fritz[1], the Meadowvale member being absent. If considered purely on faunal grounds the Meadowvale member of Credit River may be more nearly the equivalent of the lower part of the Kagawong formation of Manitoulin Island; this formation is considered to be, in part at least, the equivalent of the Queenston formation.

QUEENSTON FORMATION

Definition. The term Queenston beds was proposed by Grabau[2] for the lower shaly 1,100 feet of Hall's[3] Medina sandstone of western New York. The name is derived from the town of Queenston on Niagara River opposite Lewiston, New York, where the beds are partly exposed.

Distribution. The Queenston formation has an areal extent of about 625 square miles. It follows the base of the Niagara escarpment throughout the entire area bordering the south shore of Lake Ontario from Niagara River to Hamilton and continuing northwestward across the remainder of the area as a belt that varies from about 4 miles to 12 miles in width. Isolated exposures are scattered throughout the whole region underlain by these rocks; the thickest and most continuous outcrops, however, may best be seen at the following localities: along Credit River and its tributaries from Glen William to Huttonsville; along Oakville Creek from below Drumquin to the Middle road; along Bronte Creek from Zimmerman to Lake Ontario; along the lake shore from the mouth of Bronte Creek to Burlington; along Niagara River from 1 mile below the Whirlpool Rapids to about 3 miles below Queenston; at the base of the Niagara escarpment on various creeks such as Stoney Creek, Fortymile Creek, and Twentymile Creek; and in several brickyards, as at Terra Cotta, Brampton, and Milton Heights.

Boring records show the formation to be present beneath younger strata throughout the entire map-area.

[1] Fritz, M. A.: Trans. Roy. Soc., Canada, vol XX, sec. IV, 1926.
[2] Grabau, A. W.: Science, vol. 27, April 17, 1908, p. 622.
[3] Hall, James: Geol. of New York, pt. IV, 1843, pp. 34-57.

Lithology. The strata consist of brick-red, thinly bedded, sandy and argillaceous shale, which is remarkably uniform in character showing little or no variation either vertically or from one locality to another. The lower few feet of the formation may contain occasional greenish and reddish limestone and sandy layers, most of which enclose fossils of Richmond age. The shales are almost everywhere seamed by narrow, greenish bands disposed both parallel and at right angles to the bedding planes. The vertical seams appear to lie along small joint fissures; the horizontal ones along what may be zones of greater permeability; and the colour is probably due to a bleaching by percolating waters charged with organic acids in solution. At some localities the green colour is in the form of circular patches, imparting a mottled appearance to the shale.

The Queenston shale rapidly breaks down on exposure to the atmosphere and forms a fine, reddish, clay soil; this feature is conspicuous at various localities, and especially below the Niagara escarpment from Niagara River to the vicinity of Hamilton.

In boring samples, the formation is a uniform succession of red shale with frequent green mottlings. Well samples also show the lithological uniformity to continue throughout the whole lateral extent of the formation.

Relationship to Overlying Formation. The Queenston formation occupies a position at the top of the Ordovician system; it rests upon the Meaford formation and is overlain by the Whirlpool sandstone, which is basal Silurian. The Queenston-Whirlpool contact is exposed at several localities in the map-area, and is easily accessible on the roadside on lot 30, con. X, Esquesing tp.; at Stoney Creek near the Canadian Pacific Railway station; on the small creek below Webster Falls near Dundas; on the mountain road (highway 20A) in the city of Hamilton; and in the highway cut near the Queenston-Lewiston suspension bridge.

At some localities the top of the Queenston consists of from 6 to 24 inches of soft, greenish or bluish, clay shale, on the irregular upper surface of which rests the Whirlpool sandstone. At other places the latter sandstone rests directly upon the typical red shale, which, according to Williams[1], contains mud-cracks filled with sand from the overlying Whirlpool beds. The above conditions, coupled with the abrupt and decided change in lithology from Queenston to Whirlpool, would indicate a stratigraphic break at the top of the Queenston formation. The following section below Webster Falls (lot 11, con. I, West Flamborough tp.) will serve as a typical example of the contact in question.

	Thickness	
Whirlpool sandstone (Silurian)	Feet	Inches
Massive, light grey, medium-grained and crossbedded sandstone	8	0
Queenston shale (Ordovician)		
Soft, bluish, clay shale	0	18 to 24
Brick-red, sandy and argillaceous shale	40+	0

Thickness. The total thickness of the Queenston cannot be obtained by direct measurement as nowhere is the entire formation exposed. The

[1] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, p. 17 (1919).

thickest single exposure occurs on Niagara River at the New York end of the Queenston-Lewiston suspension bridge, where about 118 feet are exposed. From this point to Lake Ontario the river is entirely excavated in these shales. In western New York, according to Grabau[1], the Medina shales (Queenston) are 1,100 feet thick.

The total thickness of the Queenston is best obtained from bore-hole records; the following figures are from well samples examined by the writer:

County	Township	Feet
Halton	Nassagaweya	450
Wentworth	Beverly	500
Wellington	Puslinch	455
Wellington	Eramosa	440

These figures indicate a rapid thinning of the formation to the north from the vicinity of Niagara Falls.

Age and Correlation. The uniformly red colour of the Queenston sediments makes the formation a conspicuous lithologic unit in both boring samples and in field exposures. The red colour is generally ascribed to peculiar, and perhaps local, climatic conditions, which permitted extensive oxidation of the iron compounds present in the sediments while they were undergoing transportation or during and after deposition. Such oxidation is known to be extensively carried on under arid climatic conditions and with a much reduced or total absence of vegetation.

According to Grabau[2], the Queenston shales have their origin in the highlands of the Appalachian region and constitute a deltaic deposit. They possess the main characters of subaerial deposition such as the red colour, crossbedding, ripple-marks, and a general absence of marine fossils.

According to Kindle[3], fossils have never been found in the Queenston of western New York. Within the present map-area the formation is likewise in general barren, but where it rests upon underlying fossiliferous strata, with which it forms a continuous series, Richmond fossils have been observed by the writer. The presence of these fossils in the lower part, and their apparent absence in the upper part, of the formation may indicate that the lower strata extended into the sea but subsequent withdrawal of the sea left the higher beds to be laid down as subaerial sediments.

Fossils found by Foerste[4] in the lower part of the Queenston in the vicinity of Collingwood, Meaford, and Owen Sound place beyond doubt the Richmond age of the formation.

Grabau[5] regards the Queenston formation as the westward extension of the Juniata beds of Pennsylvania and believes it to be of contemporaneous deposition.

[1] Grabau, A. W.: N.Y. State Mus., Bull. 92, p. 123 (1906).
[2] Grabau, A. W.: Bull. Geol. Soc. Am., vol. 24, 1913, p. 431.
[3] Kindle, E. M.: Science, vol. 29, 1914, p. 917.
[4] Foerste, A. F.: Ohio Naturalist, vol. 13, 1913, p. 47.
[5] Grabau, A. W.: Bull Geol. Soc. Am., vol. 24, p. 431 (1913).

NOMENCLATURE OF INITIAL SILURIAN SEDIMENTS

Some geologists, particularly in the United States, interpret the Ordovician-Silurian boundary as being at the base of the Queenston formation. Practically all Canadian geologists place the boundary at the top of the Queenston formation, beginning the Silurian with the Whirlpool sandstone. For the former view the reader is referred to the writings of E. O. Ulrich[1]; in this work the latter view is adhered to.

The term Medina first appeared in Vanuxem's report (1840, pages 374, 453-55), where he states: "Medina sandstone. Called in former reports red sandstone of Oswego....." In the same report Hall writes "Medina sandstone, red marl and shale....." In his final report Hall[2] summarizes Medina and says "at Medina, on the Oak-orchard Creek, we have the best exposure of the mass which exists in the State, and hence its name (p. 43)."

It will be observed that Hall included marl, shale, and sandstone in his Medina formation. This interpretation prevailed until 1905 when the lower red marl and shale part of Hall's Medina was shown to be Richmond in age by Grabau[3], who named it the Queenston[4] formation. The upper sandy part of the original Medina became the restricted Medina of Grabau and included the shales and sandstones between the Queenston below and the Clinton strata above. The fauna of this restricted Medina has long been known and places these beds in the Silurian; it, consequently, follows that Hall's Medina bridged a systematic boundary. In addition, there is, in Ontario at least, a sedimentary break between the Queenston (lower part of the Medina of Hall) and the upper or restricted Medina of Grabau.

Schuchert[5] subsequently stated that at Niagara Falls, "the Cataract formation, 54 feet in thickness, is wedged beneath the upper Medina" (i.e., the Medina of Grabau), and he traced the Cataract (named from Cataract, Ontario) from Niagara Falls to Manitoulin Island.

This further restricted the term Medina, to include only the upper part of Grabau's Medina, that is, the Grimsby and Thorold sandstones. The Cataract then, included the lower part of Grabau's Medina, that is the Whirlpool sandstone and Cabot Head shales.

Williams[6] pointed out that the "Grimsby and Thorold sandstones are only facies of the top of the Cabot Head shale occurring farther north although they represent another faunal invasion". He also wrote: "The term Medina, as restricted by Grabau, is applicable to the formation at Niagara Falls and may be extended to Hamilton, if minor changes are overlooked.... The term Cataract as defined by Schuchert is applicable from Dundas (and fairly applicable at Hamilton, which is in the transition zone) north". All this being so, Williams concluded that the hyphenated name 'Medina-Cataract formation' was best suited for the name of the formation as a whole.

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[1] Ulrich, E. O.: Twelfth Inter. Geol. Cong., 1913, Coal Resources, pp. 593-667.
[2] Hall, James: Geol. N.Y., 4th Dist., 1843, pp. 24, 34-57.
[3] Grabau, A. W.: Science, vol. 22, 1905, p. 529.
[4] Science, vol. 27, 1908, p. 622.
[5] Schuchert, C.: Bull. Geol. Soc., Am., vol. 24, 1913, p. 107, and vol. 25, 1914, p. 287.
[6] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, pp. 23-24.

The present writer proposes to revert to the usage advanced by Grabau, and, therefore, classes as Medina all the strata between the Queenston below and the Clinton above. The strata of the Cataract formation as followed from the north towards Niagara River change in lithology and grade into the Medina as there exposed. Lithologically the cataract is only a facies of the Medina that like the Queenston below changes as it is traced westward and northward from an almost purely clastic assemblage to one largely composed of limestone. The faunas of the two phases differ, but it seems unnecessary to suppose different faunal invasions for, as Schuchert pointed out, their differences may be due to differences of habitat.

It should be stated here that the term Medina has long been used by the drillers in Ontario. The Whirlpool sandstone forms a readily recognizable horizon in well samples and is referred to as the White Medina. In addition, the predominating red colour of the Grimsby member has earned the designation Red Medina for these strata.

MEDINA FORMATION

Whirlpool Member

Definition. The term Whirlpool member was proposed by Grabau[1] for the 25 feet of quartzose sandstone that forms the base of the Medina formation on Niagara River. It rests upon the Queenston formation and is overlain by the Manitoulin member.

Distribution. The Whirlpool sandstone forms a narrow band at the base of the Niagara escarpment, which it follows throughout the entire map-area. Its flat-lying attitude and its thinness prohibit individual representation on the scale employed in the present mapping. The sandstone can be traced by natural outcroppings and by quarries from Niagara River to within 5 miles of the north boundary of the area, and may be seen to advantage at the following localities: on Niagara River from the Whirlpool Rapids to the Queenston-Lewiston bridge; on Twentymile Creek (lot 20, con. V, Louth tp.); on Stoney Creek near the Canadian Pacific Railway station; on the mountain road (highway 20A) in the city of Hamilton; at Harry Logan's quarry (lot 27, con. IX, Esquesing tp.); at A. W. Norton's quarry (lot 26, con. IX, Esquesing tp.); on the roadside on lot 30, con. X, Esquesing tp.; at the several quarries situated about one mile southwest of Inglewood; and at the Dingle (lots 33, 34, 35, con. I, Albion tp.).

Well borings indicate that the member extends beneath younger strata over the entire map-area west and south of the Niagara escarpment.

Lithology. The Whirlpool member is typically a resistant, light grey, quartzose sandstone. At some localities, as at the Inglewood quarries, at Credit Forks, and at the Dingle, the rock is chocolate coloured or even presents a mottling of light grey in a chocolate background. The stone usually occurs in beds of considerable thickness, but where seen in its entirety the upper few feet are characteristically more thinly bedded than the lower part. Wave marks are common, but are best developed in upper, thinner beds.

[1] Grabau, A. W.: Jour. Geol., vol. 17, 1909, p. 238.

A petrological study of the Whirlpool sandstone of the Niagara section has been made by Alling[1]; he refers to it as a feldspathic sandstone, and lists, besides the dominant quartz, such accessory minerals as microcline, plagioclase, garnet, leucoxene, magnetite, apatite, tourmaline, and zircon. Argillaceous fragments similar to and identical with the argillaceous content of the Queenston formation are also present. The quartz grains are largely secondarily enlarged, the grain sizes placing the sand in the fine and medium class of the Wentworth scale. Alling suggests that most of the quartz has been derived from a pre-existing sandstone; this is in harmony with Grabau's[2] conclusions that the New York Queenston-Medina is the reworked Juniata-Tuscarora of Pennsylvania.

In well samples the Whirlpool member appears as a light grey to almost white, fine- to medium-grained sandstone. Reliable well samples are confined in their distribution to the southern half of the map-area, so that no information as to the appearance of the member in the northern part of the area is available; its recognition here, however, should present no difficulty as field exposures show the member to rest upon red shale (Queenston) and to be overlain by argillaceous dolomite (Manitoulin member). This sandstone is the White Medina of the drillers.

A study of both field exposures and boring samples has shown the member to be lithologically uniform throughout the entire map-area, although changes in colour from light grey to chocolate and, in some localities, mottled, has been observed.

Thickness. The thickness of the Whirlpool is obtainable both by direct measurement and by an examination of boring samples. By direct measurement it is 25 feet on Niagara River, 12 feet at Hamilton, 10 feet at Stoney Creek, 8 feet at Dundas, and averages 12 feet in the region between Milton Heights and Credit Forks. An examination of well samples by the writer adds the following information.

County	Township	Thickness
		Feet
Wentworth	Glanford	10
Wentworth	Beverly	15
Lincoln	Caistor	15
Wellington	Puslinch	5
Wellington	Eramosa	20
Welland	Humberstone	16
Welland	Wainfleet	20
Haldimand	Canborough	30
Haldimand	Sherbrooke	18
Haldimand	Rainham	15

The Whirlpool appears to thin westward and northward from Niagara River, but local thickenings or irregularities are indicated.

[1] Alling, H. L.: Rochester Acad. Sci., vol. No. 7, pp. 189-207 (1936).
[2] Grabau, A. W.: Bull. Geol. Soc. Am., vol. 24, 1913, pp. 431-433.

Fauna. The Whirlpool is practically devoid of fossil remains, no unquestionable forms having been observed by the writer. Williams[1], however, reports three forms, none of which is apparently well enough preserved to admit of positive specific identification. These are listed below.

Pleurotomaria sp.
Hormotoma subulata (Conrad)??
? *Cornulites*

Manitoulin Member

Definition. The Manitoulin member immediately overlies the basal Whirlpool sandstone, and is itself overlain by the Cabot Head member. The term was proposed by Williams[2] for the lower dolomitic part of the Cataract formation because of its importance on Manitoulin Island; it is at this latter locality its typical development occurs.

In the present map-area the member is ill-defined; its lithology shows marked changes when traced southward, resulting in extreme difficulty in placing its upper limit.

Distribution. The Manitoulin member has the same general distribution as the underlying Whirlpool sandstone. It may be seen to advantage at the following localities: on Niagara River; at Stoney Creek near the Canadian Pacific Railway station; at Webster Falls near Dundas; at Hamilton on the mountain road (highway 20A); on a small stream immediately above the bridge on the road between lots 27 and 28, con. IX, Esquesing tp.; and at A. W. Norton's quarry (lot 26, con. IX, Esquesing tp.). Boring samples indicate its extension beneath all younger strata throughout the area.

Lithology. As previously stated, this member is not well defined in this map-area. Although occupying the same stratigraphic position as at the type locality it shows lithological differences; nor does it present a uniform character even within the present area. When traced from the vicinity of Inglewood to Niagara River, the member gradually changes from an impure, argillaceous and magnesian or dolomitic limestone to an argillaceous shale.

As exposed at several localities between Credit Forks and Milton Heights, the Manitoulin member consists of grey, somewhat argillaceous, magnesian or dolomitic limestone, disposed in fairly even beds from 2 to 8 inches in thickness and in places weathered to a buff colour. The lower few feet characteristically show thin interbeds of soft grey or bluish shale from 2 to 4 inches thick.

Exposures between Dundas and Stoney Creek are lithologically similar to those described above, but show more even and uniformly thinner calcareous beds with the shale partings distributed throughout the whole thickness of the member instead of being concentrated in the lower part of the succession.

No exposures showing Manitoulin strata occur between Grimsby and Niagara River. At the latter locality, the Whirlpool sandstone is overlain by about 23 feet of dark grey, fissile shale. About 8 feet from the base of

[1] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 28.
[2] Williams, M. Y.: Ottawa Nat., vol. 27, 1913, p. 37.

this interval is a 2-foot zone of thin (1- to 4-inch) sandy beds. Above the 23 feet of shale is a 3-foot zone, weathered into thin beds, of greenish, calcareous sandstone containing the bryozoa *Helopora fragilis*.

It will be noted that the Manitoulin horizon on Niagara River is occupied by strata that are dominantly shale. Just how much of this should be included in the Manitoulin member is difficult to decide; the only calcareous strata are in the 3-foot zone overlying the 23 feet of grey shale. Williams[1], the author of the member, suggests that this 3-foot zone may represent the southeasterly extension of the Manitoulin beds. The same author lists the bryozoa *Helopora fragilis* from this member, but also reports it from the overlying Cabot Head member. It is here held that the Manitoulin member and the overlying Cabot Head strata cannot be separated on Niagara River on lithological evidence.

No reliable well samples are at hand that show the character of the Manitoulin beds in drill cuttings in that part of the area north of Dundas. South of Lake Ontario, however, many holes have been drilled, and reliable samples from several of these have been examined by the writer.

In all the wells examined it was found difficult, and in some cases impossible, to separate the Manitoulin strata from the overlying Cabot Head member. Resting on the Whirlpool sandstone is up to 60 feet of strata, dominantly grey shale but with minor amounts of dolomite and dolomitic shale in the lower part in some wells. This shale is consistently overlain by a series of red and grey sandstones with some greenish shale, which doubtless represents the Grimsby member. This is the Red Medina of drillers, and all samples below this horizon and above the Whirlpool sandstone (White Medina) are assigned to the Cabot Head by them; they do not recognize the Manitoulin beds as separate from the overlying Cabot Head strata.

In our study of well samples we have attempted to separate these two members and to show the general lithologic character of the Manitoulin member throughout its underground extent; in interpreting the samples, we have been guided by a study of outcrops and the results appear in the following table:

[1] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 28.

County	Township	Thickness	Lithology
		Feet	
Wentworth.....	Glanford.....	45	Greenish and grey shale; minor amount of limy shale.
Wentworth.....	Beverly.....	35	Grey, crystalline dolomite, some greenish shale and dolomitic shale.
Lincoln.....	Caistor.....	55	Greenish grey shale; minor amount of red and grey limestone (probably includes some Cabot Head).
Wellington.....	Puslinch.....	25	Grey, crystalline dolomite; some grey, shaly dolomite.
Wellington.....	Eramosa.....	20	Grey, crystalline dolomite; some greenish shale.
Welland.....	Humberstone...	20	Grey shale.
Welland.....	Wainfleet.....	15	Grey, crystalline dolomite; minor amount of grey shale.
Haldimand.....	Canborough.....	60	Grey shale; minor amount of limy shale near base (probably includes most of Cabot Head).
Haldimand.....	Dunn.....	45	Grey shale; minor amount of grey dolomite toward base (includes some Cabot Head).
Haldimand.....	Sherbrooke.....	42	Grey and greenish shale with grey, limy shale at base (Cabot Head and Manitoulin).
Haldimand.....	Rainham.....	15	Greenish grey, shaly dolomite; some greenish shale.

The above table indicates that throughout the region between Lake Ontario and Lake Erie the Manitoulin horizon is represented by strata dominantly shale, but with a small limy or dolomitic content. In the northwest part of the region (Wellington county) crystalline dolomite immediately overlies the Whirlpool sandstone. It would appear then, from a study of both outcrops and well samples, that the Manitoulin horizon gradually changes in its lithology from dominantly calcareous or dolomitic to dominantly shale from north to south across the entire map-area.

Thickness. Some indication of the thickness of the Manitoulin strata as determined from well borings is given in the above table. In addition, direct measurements have been made at various localities where the member is exposed; the following figures were obtained in this way: 8 feet at Stoney Creek; 10 feet at Webster Falls; 10·5 feet at Hamilton; and 25 feet on a small stream above the bridge on the road between lots 27 and 28, con. IX, Esquesing tp. (3 miles northwest of Georgetown). Although the thickness assigned to the Manitoulin strata in well samples varies, it would seem that in general this member thickens northward across the map-area.

Fauna. In contrast with the underlying Whirlpool sandstone, the Manitoulin member encloses a considerable fauna. The following table is extracted from Williams[1] report.

Genera and species	Niagara River	Grimsby	Stoney Creek	Hamilton	Dundas	Glen William	Cataract and Credit Forks
PLANTS							
Buthotrephis gracilis Hall				x			?
HYDROZOA							
[2]*Clathrodictyon vesiculosum* Nicholson and Murie						?	x
ANTHOZOA							
Streptelasma cf. *hoskinsoni* Foerste			x				x
Enterolasma cf. *geometricum* (Foerste)			x	x		x	x
Ceratopora tenella (Rominger)						x	
Palaeofavosites asper D'Orbigny				x			x
CRINOIDEA							
Eucheirocrinus ontario Springer			x				
[3]BRYOZOA							
Homotrypa confluens (Foerste)						x	
Hallopora magnopora (Foerste)						x	
Helopora fragilis Hall	x						
BRACHIOPODA							
Lingula cuneata Conrad	x						
Strophonella striata Hall							x
Leptaena rhomboidalis (Wilckens)			x	x		x	x
Plectambonites transversalis (Wahlenberg)			x	x			
Orthis flabellites Foerste			x				
Hebertella fausta (Foerste)			x	x			
Platystrophia biforata (Schlotheim)			x	x			
Dalmanella eugeniensis Williams			x				x
Camarotoechia neglecta (Hall)			x	x			x
Rhynchotreta cabotensis Williams			x				
Atrypa parksi Williams			x	x	x		x
Whitfieldella cataractensis Williams	x				x		x
Coelospira planoconvexa (Hall)		x		x	x		x
GASTEROPODA							
Bucanella trilobata (Conrad)	x						
Strophostylus cancellatus (Hall)			x				
VERMES							
Cornulites distans Hall			x				
TRILOBITA							
Calymene clintoni (Vanuxem)							

[1] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 30.
[2] Reported by Parks: Twelfth Inter. Geol. Cong., Guide Book No. 5, 1913, p. 10.
[3] Identified by Bassler.

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Cabot Head Member

Definition. The name Cabot Head was proposed by Grabau [1] for the rocks well exposed at that locality, and comprised the strata described by Logan [2] as lying between the Manitoulin dolomite below and the Lockport dolomite above. These rocks, as described by Williams[3], consist, in ascending order, of 70 feet of shale, red near the base, firm and green near the top; 4 feet of soft, green shale; 15 feet of thin, even-bedded dolomite; 32 feet of firm, green shale; 8 feet of rather massive, creamy weathering dolomite; and 4 feet of soft, green shale.

As in the present work the Grimsby and Thorold members are considered as facies of the Cabot Head, and as the Clinton and overlying Rochester strata pinch out a short distance north of Hamilton, the Cabot Head member as here employed rests upon the Manitoulin member and is overlain successively, from south to north, by the Clinton and by the Lockport dolomite.

Distribution. Cabot Head strata have the same general distribution as the underlying Manitoulin beds. They extend from Niagara River to the northern boundary of the area, and the part below the Grimsby sandstone may be seen to advantage at the following localities: Stoney Creek, near the Canadian Pacific Railway station; at Hamilton on the mountain road (highway 20A); at Clappison Corners where highway 6 cuts the Niagara escarpment; at Limehouse in the Canadian National Railway cut; and on a small creek below where it crosses the road between concessions VIII and IX, Esquesing township, about lot 28 (3·5 miles northwest of Georgetown). Well borings indicate their extension beneath all younger strata throughout the southern half of the area.

Lithology. As seen at the outcrop, the Cabot Head member varies widely in its lithology from place to place. Typically it includes red, green, and grey shales, sandy dolomite, shaly dolomite, and ferruginous, limy beds. The strata can, however, best be illustrated by recording sections or partial sections as they occur at various localities; some of these distributed from Limehouse at Niagara River appear below.

	Feet	Inches
1. Section in railway cut at Limehouse.		
Lockport dolomite		
Massive, grey weathered, light grey to white dolomite.	9+	
Cabot Head member		
Buff weathered, fine, bluish, argillaceous and ferruginous limestone in even beds from 3 inches to 1·5 feet thick.....	7	0
Bluish grey, sandy and argillaceous shale with frequent, thin, platy, dolomitic layers.....	10	0
Dark red, irregularly bedded, sandy limestone and sandstone in beds from 2 inches to 1 foot thick interbedded with red shale. *Helopora fragilis, Platystrophia biforata, Rhynchotreta* sp.	6	0
Red and green, soft, argillaceous shale.....	4+	

[1] Grabau, A. W.: Bull. Geol. Soc. Am., vol. 24, 1913, p. 460.
[2] Logan, W. E.: Geol. of Canada, 1863, pp. 312-320.
[3] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 33.

	Feet	Inches
2. Section on small creek about lot 28, con. IX, Esquesing tp.		
Lockport dolomite		
Massive, light grey dolomite	?	
Cabot Head member		
Grey to buff weathered, light grey, porous, irregularly bedded dolomite	7	0
Soft, bluish grey shale with frequent 1- to 2-inch dolomitic layers	10	0
Talus of soft, red, grey, and green shale with sandy and limy beds with *Helopora fragilis*	10+	
3. Section on highway No. 6 immediately south of Clappison Corner.		
Clinton?	?	
Cabot Head member		
Thin, evenly bedded, grey dolomite with thin, grey, shale partings	3	0
Bluish grey, soft, sandy and argillaceous shale with occasional 2- to 4-inch sandy and dolomitic beds	11	0
Irregular beds of light grey sandstone	2	0
Interbedded sandy and limy beds up to 6 inches thick with soft, sandy, red and greenish shale. Many *Helopora fragilis* on the hard layers	16	0
Hard, grey to buff sandstone	1	3
Soft, bluish grey shale	2	9
4. Section at Hamilton.		
Cabot Head member		
Thin beds (2 to 5 inches) of light grey and reddish sandstone with interbeds of greenish, sandy shale in lower part. This is the Grimsby member	7	6
Brick-red, sandy shale with frequent thin (1- to 3-inch) beds of impure sandy limestone or dolomite. Many *Helopora fragilis*	4	6
Irregular 2- to 3-foot zone of red sandstone. Red shale with thin limy bands. *Helopora fragilis*	13	0
Greenish grey shale with 2- to 4-inch even beds of grey sandstone	7	0
Grey shale with frequent thin interbeds of sandstone and sandy limestone or dolomite	34	6
Manitoulin member		
Thin and irregularly bedded, grey to bluish, impure limestone with thin, grey, shale partings	10	6
5. Section at Stoney Creek.		
Cabot Head member		
Light grey to whitish, hard sandstone. This is the Thorold member	6	0
Grey, greenish, and red mottled sandstone with interbeds of red, sandy shale. This is the Grimsby member	9	0
Red, sandy shale with frequent thin (1- to 3-inch) beds of hard, sandy limestone. *Helopora fragilis*	40	0
Grey shale with reddish zones	11	0
Grey and red mottled sandstone	0	8
Grey shale with frequent thin, sandy, limestone beds	34	0
Manitoulin member		
Fairly even beds of bluish, sandy limestone with grey shale partings	8	0

	Feet	Inches
6. Section on Niagara River.		
Cabot Head member		
Light grey to whitish, hard sandstone. This is the Thorold member	6	6
Red and grey mottled sandstone and red, sandy shale. This is the Grimsby member	47	8
? Greenish, sandy limestone weathered into thin beds. Many *Helopora fragilis*	3	0
Dark grey, fissile shale	12	0
Thin (1- to 4-inch), hard, grey, limy and sandy beds with grey shale partings	2	0
Dark grey, fissile shale	8	6
Whirlpool member		

Section No. 6 (Niagara River) shows the strata between the Thorold member above and the Whirlpool member below, that is the combined Cabot Head and Manitoulin members. This section illustrates the extreme difficulty encountered when attempting to separate the two members on lithologic grounds, as the Manitoulin strata are essentially shales at this locality.

The character of the Cabot Head strata, excluding the Thorold and Grimsby members, as seen in well cutting throughout that part of the area south of the town of Brampton is shown in the following table. In examining the well samples, there were cases in which the Cabot Head could not be separated from either the overlying or underlying strata with any confidence; in such cases the members represented are indicated in parenthesis.

County	Township	Thickness	Lithology
		Feet	
Halton	Nassagaweya	73	Red, greenish, and grey shale.
Wentworth	Glanford	30	Red, calcareous sandstone; minor amount of red and green shale.
Wentworth	Beverly	40	Chiefly red shale with minor amounts of sandy shale (Grimsby and Cabot Head).
Lincoln	Caistor	40	Red, sandy shale with small amount of green shale and grey sandstone (Grimsby and Cabot Head).
Wellington	Puslinch	50	Red and grey shale with minor amount of lime.
Wellington	Eramosa	40	Red and greenish grey shale with small amount of red and grey, dolomitic shale.
Welland	Humberstone	25	Chiefly red shale with a little grey shale and white sandstone.
Haldimand	Canborough	60	Grey shale with minor amount of limy shale near base (Cabot Head and Manitoulin).
Haldimand	Dunn	25	Grey and greenish grey shale.
Haldimand	Sherbrooke	42	Grey and greenish shale with grey, limy shale at base (Cabot Head and Manitoulin).
Haldimand	Rainham	35	Greenish grey shale with minor amount of dolomite in lower half.

The above table indicates that the general lithology of the Cabot Head strata as seen on the outcrop continues throughout the underground extent of the member. The strata are dominantly red, grey, and greenish shale with the thin, limy, dolomitic and sandy beds seen on the exposure being represented by a limy or sandy content in the well samples.

Thickness. The total thickness of the Cabot Head strata has been measured at two localities, viz., at Hamilton where, excluding the Grimsby member, it is 59 feet, and at Stoney Creek, where, excluding the Thorold and Grimsby members, it is 85 feet.

Reliable figures cannot be deduced from well samples, because in them the member cannot be delimited with any confidence.

Fauna. The fauna of the Cabot Head member as reported by Williams[1] is very similar to that of the underlying Manitoulin beds. About 60 per cent of the forms are common to both members in the present map-area. The following are forms reported by Williams from the Cabot Head that are not included in the Manitoulin fauna:

Genera and species	Stoney Creek	Dundas	Kelso	Lime-house	Credit Forks
PLANTS					
Buthotrephis gracilis Hall	x	.....	x	.....	.....
PORIFERA					
Receptaculites canadensis Billings	.....	.....	.....	x	.....
ANTHOZOA					
Zaphrentis turbinata (Hall)	.....	.....	.....	.....	x
BRACHIOPODA					
Rhynchonella? plicata (Hall)	.....	.....	.....	x	.....
Rhynchonella? janea Billings	x	.....	x	x	x
PELECYPODA					
Pterinea cf. *undata* (Hall)	.....	.....	x	x	.....
Pterinea brisa Hall	.....	.....	x	.....	.....

Grimsby Member

Definition. The term Grimsby member was proposed by Williams[2] for that part of the Medina formation that lies below the Grey Band (Thorold sandstone) and above the Cabot Head shale as it occurs in the Niagara Peninsula. The type locality is at Grimsby where the rocks are well exposed in the gorge of Fortymile Creek.

Williams considers this sandstone as the inshore phase of the Cabot Head shales as they occur north of Dundas. This view is here followed, the Grimsby being interpreted as a facies of the top of the Cabot Head.

Distribution. The Grimsby member exhibits its maximum development at Niagara River, from where it extends along the Niagara escarp-

[1] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 35.
[2] Williams, M. Y.: Geol. Surv., Canada, Sum. Rept. 1913, p. 184.

ment to the vicinity of Hamilton; at this locality it is almost indistinguishable although about 12 feet of red and grey sandstone and red, sandy shales underlying the Clinton dolomite may represent the member. At Dundas, below Webster Falls, about 7 feet of grey sandstone and shale holding the same stratigraphic position may also represent the Grimsby member.

The Grimsby member is exposed at several places between Niagara River and Dundas; the more important of these localities are as follows: at Niagara River above Lewiston, New York, along the New York Central and Hudson River Railway; at Grimsby in the gorge of Fortymile Creek; at Stoney Creek near the Canadian Pacific Railway station; at Hamilton (on highway 20A); and at Webster Falls near Dundas.

Lithology. At Niagara River, the locality of its maximum development, the Grimsby member consists chiefly of compact, reddish, or grey and red mottled sandstone, generally disposed in beds from 4 inches to 12 inches thick and separated by red, sandy shale partings. Occasional zones of red shale from 2 to 3 or 4 feet thick occur throughout the succession. About 18 feet from the base of the member is a 15- to 24-inch interval of mottled sandstone showing a " concretionary " or " pillow " structure and appearing not unlike a bed of large elliptical boulders. Some of the " pillows " are as much as 3 feet in their longer diameter. Many of the sandstone beds are distinctly lensy, thinning out and disappearing in a direction parallel to the planes of stratification. The upper 12 feet of the succession contains massive beds up to 3 feet thick; these are characterized by crossbedding on a large scale and such as to indicate varying current and wave action in the shallow basin of deposition.

The lithology of the Grimsby member is essentially similar wherever exposed; this is well ilustrated by the following sections, taken at selected localities between Niagara River and Dundas:

	Feet	Inches
Section at Grimsby (Fortymile Creek).		
Grimsby member. Soft, bluish grey shale.....	6	0
Thickly bedded, red and grey mottled sandstone and red, sandy shale	12	0
Section at Stoney Creek.		
Clinton dolomite. Heavy-bedded, dark grey dolomite with grey shale partings.....	12	6
Grimsby member. Grey, greenish, and red mottled sandstone with red, sandy shale (some may be Thorold sandstone).....	9	0
Section at Hamilton.		
Clinton (Pentamerous bed)		
Grimsby member. Light grey sandstone and greenish, sandy shale	5	0
Thin beds of grey sandstone, green near the base with green, sandy shale partings (Thorold and Grimsby not easily differentiated here).....	7	6
Cabot Head member		
Section at Dundas (Webster Falls).		
Thorold member. Light grey, quartzose sandstone..	1	—
Grimsby member. Thinly bedded, grey sandstone with thin interbeds of grey and bluish shale..	7	—
Cabot Head member		

The character of the Grimsby strata as seen in well samples throughout the Niagara Peninsula is shown in the following table:

County	Township	Thickness	Lithology
		Feet	
Wentworth	Glanford	10	Red, limy shale, minor amount of green shale.
Wentworth	Beverly	—	Not differentiated from Cabot Head.
Lincoln	Caistor	40	Red, sandy shale with small amount of green shale and grey sandstone (Grimsby and Cabot Head).
Wellington	Puslinch		No Grimsby as such.
Wellington	Eramosa		No Grimsby as such.
Welland	Humberstone	50	Red, sandy shale and shaly sandstone with minor amount of white sandstone.
Welland	Wainfleet	35	Red and grey sandstone with minor amount of red and green shale.
Haldimand	Canborough	40	Red and green sandstone with almost equal amount of red and green, sandy shale.
Haldimand	Dunn	40	Grey and red sandstone with lesser amount of red and green, sandy shale.
Haldimand	Sherbrooke	50	Red and green shale with lesser amount of grey and reddish sandstone.
Haldimand	Rainham	65	Red and grey sandstone with equal amount of red and green shale.

This table shows the Grimsby to retain essentially the same lithology in its underground extent as appears on the outcrop. The strata are readily recognizable in well samples by their prevailingly red colour and constitute the Red Medina of the drillers.

It should be remembered that in the present map-area at least, the Cabot Head member below the horizon of the Grimsby member contains considerable red shale, which in well samples appears similar to much of the Grimsby shale; in many instances, therefore, various amounts of the strata here assigned to the part of the Cabot Head below the Grimsby member may be included by drillers on a colour basis in the Red Medina (Grimsby). Detailed examination of the samples, however, shows the Grimsby to be dominantly sandstone and sandy shale, whereas the underlying part of the Cabot Head is dominantly an argillaceous shale with a varying content of lime; no lime occurs in the typical Grimsby.

Thickness. The thickness of the Grimsby member has been measured at several localities, with the following results: 48 feet on Niagara River; 18 feet at Grimsby; 9 feet at Stoney Creek; 12½ feet at Hamilton (including Thorold sandstone); and 7 feet at Dundas.

The thickness assigned to the member from examination of well samples appears in the previous table.

It will be seen that the thickness decreases from a maximum at Niagara River northward to Dundas; north of this locality the Grimsby cannot be

differentiated. The same general condition is indicated by well samples, the member being thickest in the south (Rainham township) and becoming thinner northward, being indistinguishable in Puslinch township.

Fauna. The Grimsby member has a very small fauna, consisting chiefly of bivalves. The sparseness of this fauna is not necessarily due to unfavourable environment, but may, in part at least, be attributable to many fossils having been washed away by the strong current and wave action so definitely indicated in the sediments.

The following table, taken from Williams[1], shows this fauna. The locality Kelso has been omitted as the writer has not identified any Grimsby strata at that locality.

Genera and species	Niagara River	Thorold	Jordan	Hamilton	Waterdown	Flamborough township
BRACHIOPODA						
Lingula cuneata Conrad	x	x	x	.....	.....	.....
Lingula clintoni Vanuxem	.....	.....	.....	?	.....	.....
Dalmanella eugeniensis Williams	.....	.....	.....	x	.....	.....
Camarotoechia neglecta Hall	x	.....	.....	x	.....	.....
PELECYPODA						
Pterinea cf. *undata* (Hall)	x	.....	.....	x	x	x
Modiolopsis primigenia (Conrad)	x[1]	.....	.....	x	.....	.....
Modiolopsis orthonota (Conrad)	x[1]	.....	.....	.....	.....	.....
Modiolopsis kelsoensis Williams	.....	.....	.....	.....	x	.....
Ctenodonta machaeriformis (Hall)	.....	.....	.....	.....	x	.....
Nuculites cf. *ferrugineum* Foerste	.....	.....	.....	.....	x	.....
GASTEROPODA						
Bucanella trilobata (Conrad)	x	.....	.....	.....	.....	.....

[1] Reported by Grabau.

Thorold Member

Definition. The term Thorold Quartzite was proposed by Grabau[2] for the beds that separate the Grimsby member from the overlying Clinton dolomites, and named from their exposure at Thorold, Ontario. This sandstone is the equivalent of the "Grey Band" of Eaton, which includes the upper grey sandstone beds of the Medina formation.

Distribution. The Thorold member has roughly the same distribution as the underlying Grimsby sandstone. It extends along the Niagara escarpment from Niagara River to Hamilton, at which locality it is not easily differentiated from the Grimsby. The best exposures of the Thorold sandstone may be seen at the following localities: at Niagara River (above Lewiston, New York, along the New York Central and Hudson River Railway); below the falls on Fifteenmile Creek at Rockway; below DeCew Falls; where the Grimsby Beach road cuts the escarpment; in the

[1] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 40.
[2] Grabau, A. W.: Bull. Geol. Soc. Am., vol. 24, 1913, p. 460.

road cut ½ mile southwest of Jordan; where the road between lots 16 and 17, Saltfleet township, cuts the escarpment; and at Webster Falls near Dundas. Its underground extension throughout the region between Lake Ontario and Lake Erie is indicated by well samples.

Lithology. As seen at the outcrop the Thorold member is a light grey to whitish, hard sandstone in beds from a few inches to several feet in thickness. At Niagara River it appears as both a single 6½-foot bed and as several thinner beds at different places. Crossbedding is a common feature.

According to Alling[1], the sandstone at Niagara consists of 70 per cent quartz, 6 per cent feldspars, and 20 per cent argillaceous materials. Williams[2] reports the quartz to be in the form of rounded to subangular grains of 0·10 mm. average diameter, closely interlocked.

The Thorold member is not commonly recognized as separate from the overlying Clinton by drillers; both are lumped together under the term Clinton. This is probably due to the fact that both are commonly white in colour, the Clinton being a white, crystalline dolomite and the underlying Thorold a white sandstone. In our examination of well samples, cases were encountered where it was impossible to separate the Thorold from the Clinton although the presence of the Thorold was definitely indicated by a varying sand content in the samples immediately above the red Grimsby sandstone. The following table illustrates this condition and also shows those wells in which the Thorold was clearly differentiated.

County	Township	Thickness	Lithology
		Feet	
Wentworth	Glanford	30	Light grey, crystalline dolomite with light grey sandstone in lower part (Clinton + Thorold).
Wentworth	Beverly	.....	Thorold not recognized.
Lincoln	Caistor	.....	" "
Wellington	Puslinch	.....	" "
Wellington	Eramosa	.....	" "
Welland	Humberstone	30	Light grey, coarsely crystalline dolomite with a little pale greenish sandstone at the base (Clinton + Thorold).
Welland	Wainfleet	10	Light grey to white, medium-grained sandstone.
Haldimand	Canborough	30	Light grey, finely crystalline dolomite with a little white sandstone at the base (Clinton + Thorold).
Haldimand	Dunn	.....	Thorold not recognized.
Haldimand	Sherbrooke	33	Grey, coarsely crystalline dolomite with minor amount of white sandstone (Clinton + Thorold).
Haldimand	Rainham	14	Light grey, medium-grained sandstone.
Brant	Onondaga	10	Light grey and greenish, medium-grained sandstone.

[1] Alling, H. L.: Rochester Acad. Sci., vol. 7, No. 7, 1936, p. 196.
[2] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 41.

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Thickness. The following figures represent the thickness here assigned to the Thorold sandstone at the various localities: 6½ feet at Niagara River; 1 foot at Webster Falls (Dundas); 6± feet where road between lots 16 and 17, Saltfleet township, cuts the escarpment; 10 feet below the falls on Fifteenmile Creek at Rockway; and 8 feet in the road cut ½ mile southwest of Jordan. Well samples indicate from 10 to 14 feet for this member.

Fauna. The Thorold sandstone is practically devoid of fossils, although at almost every exposure the worm burrows *Daedalus archimedes* and *Arthrophycus alleghaniensis* may be found.

It seems warranted at this time, especially from the standpoint of the driller, to give some idea of the thickness of strata to be expected between the Thorold above, and the Whirlpool sandstone below. As previously stated, the Whirlpool is readily recognized in well samples and is known to drillers as the White Medina; the Thorold sandstone is usually reported with the Clinton and is likewise easily recognized. The Manitoulin, Cabot Head, and Grimsby members, however, are not so readily separated in well samples, and especially is this the case in the Niagara Peninsula where the Manitoulin horizon is dominantly shale. In this region, therefore, between the Clinton (Clinton + Thorold) and the Whirlpool, the drillers recognize only two divisions, an upper red division (Red Medina) and a lower, grey, shaly division that they call the Cabot Head, the Manitoulin member not being recognized. A detailed study of well samples has shown that where the upper part of the Cabot Head below the Grimsby member is red, this has been included with the Red Medina, whereas the lower, grey part has been included with the Manitoulin member and reported as Cabot Head.

The following table shows the combined thickness of the Manitoulin, Cabot Head, and Grimsby members in the township specified.

Township	Thickness	Township	Thickness
	Feet		Feet
Glanford	85	Wainfleet	95
Beverly	75	Canborough	100
Caistor	95	Dunn	110
Puslinch	75	Sherbrooke	92
Eramosa	60	Rainham	115
Humberstone	95		

Relation of Medina to Overlying Formation. The Medina formation, whether its uppermost member be the Thorold sandstone or the Cabot Head shale, is overlain by Clinton strata from Niagara River to a short distance north of Dundas, and thence by the Lockport dolomite to the north boundary of the area.

The actual contact is everywhere sharp, whether the overlying strata be shale or dolomite. At Niagara River the Thorold is overlain by about 3 feet of grey, purplish, or olive-green, fissile shale. This shale persists along the escarpment where it is about 1 foot thick at Rockway and only a few inches

at Webster Falls (Dundas). Somewhere between Dundas and Limehouse the Clinton pinches out and at the latter locality the Cabot Head is immediately overlain by Lockport dolomite. Here the upper 7 feet of the Cabot Head is thinly bedded ferruginous limestone or dolomite.

Correlation. Twenhofel[1] considers the Cataract as defined by Schuchert as the probable equivalent of the lower part of the Gun River formation of Anticosti Island.

Ulrich[2] considers the Clinch sandstone of Tennessee as the probable equivalent of the Tuscarora sandstone of Pennsylvania, which in general is to be correlated with the Medina of New York and Ontario.

Savage has made an extensive study of the Lower Silurian rocks in Illinois and Missouri[3], as well as in the Hudson Bay region[4]. Throughout this wide area he finds a striking similarity in the faunas of the Virgiana zone and of the higher strata containing *Camarotoechia? winiskensis, Isochilina grandis* var. *latimarginata,* and *Leperditia hisingeri* var. *fabulina.* He concludes, therefore, that during the time these strata were laid down the regions were part of the same basin of deposition that was broadly connected northward with the Arctic Ocean.

North of the present map-area, on Bruce Peninsula and Manitoulin Island, the Cabot Head member contains thin-bedded, argillaceous dolomites known as the Dyer Bay dolomite lentille. According to Williams[5], these beds are absent southward from Colpoy Bay, but 2 or 3 feet of ferruginous limestone occur a little above the centre of the Cabot Head shales as far south as Kelso. This limestone contains common Cataract fossils, among which is *Rhynchonella? janea* also present in the Dyer Bay lentille; the limestone at Kelso, therefore, may well be the southern representation of the Dyer Bay dolomite.

The presence of *Virgiana mayvillensis* in the Dyer Bay dolomite establishes its equivalence with the Virgiana zones described by Savage. As the Dyer Bay dolomite that is near the top of the Cabot Head is of upper Edgewood age, it seems probable that the remainder of the Cabot Head and the Manitoulin dolomite are of lower Edgewood age, for the Girardeau and the Manitoulin dolomite have little in common[6].

In the Lake Timiskaming region, Hume[7] reports part of the Wabi formation as equivalent to the Cataract of Schuchert. The presence of *Camarotoechia? winiskensis, Leperditia hisingeri* var. *fabulata,* and *Zygobolbina williamsi* indicates a connection between this area and the Hudson Bay region where the same assemblage has been observed by Savage.

The presence of *Virgiana mayvillensis* in the Dyer Bay dolomite may indicate that the Arctic waters connected for a time with the sea that deposited the Cataract phase of the Medina in Ontario. However, as pointed out by Hume[8], only one fossil is common to the Dyer Bay dolomite and the Wabi formation, so that this limited correspondence of the fauna

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[1] Twenhofel, W. H.: Geol. Surv., Canada, Mus. Bull. 3, 1914, p. 29.
[2] Ulrich, E. O.: Bull. Geol. Soc. Am., vol. 22, 1911, p. 108.
[3] Illinois Geol. Surv., Bull. 23, 1917, pp. 67-160.
[4] Jour. Geol., vol. 26, 1918, pp. 336-340.
[5] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 36.
[6] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 44.
[7] Hume, G. S.: Geol. Surv., Canada, Mem. 145, 1925, p. 28.
[8] Hume, G. S.: Geol. Surv., Canada, Mem. 145, 1925, p. 33.

of Lake Timiskaming with that of the Cataract seems to point to a separation of these two basins in late Medina time, with much thicker deposits being formed in the Timiskaming area than are found above the Dyer Bay dolomite of Lake Huron.

CLINTON FORMATION

Definition. In the present work, the Clinton formation includes all the strata between the Medina formation below and the Rochester shale above.

The formation takes its name from Clinton, in central New York, where is was described by Vanuxem[1] in 1842. In the following year Hall[2] described in greater detail the Clinton strata at Rochester and followed the section westward to Niagara River. At this locality he noted the diminished thickness of the Clinton through loss of its shale members, the formation there becoming almost entirely a continuous limestone mass.

The Clinton of New York has been the subject of considerable study since it was first described. It consists of a variety of sediments that show frequent lithologic and faunal changes. These irregularities in character point to shoreward deposition in oscillating seas, and have resulted in a variety of interpretations by different workers.

It is not our intention to trace in detail the Clinton history and subdivision; for that aspect of the subject the reader is referred especially to the following works:

Chadwick, G. H.: Bull. Geol. Soc. Am., vol. 29, 1918, pp. 327-368.
Sanford, J. T.: Jour. Geol., vol. 43, 1935, pp. 169-184.
Ulrich, E. O., and Bassler, R. S.: Maryland Geol. Surv., 1923, pp. 233-264.

In Ontario, what is now the Manitoulin and Cabot Head members of the Medina formation was misnamed the Clinton by Logan[3], a circumstance arising partly from the erroneous idea that the Whirlpool sandstone was identical with the Grey Band (Thorold) of New York. This is understandable when one considers the lithological similarity of the Whirlpool and the Thorold sandstones, and especially the fact that the latter disappears in the vicinity of Hamilton whereas the Whirlpool continues almost to Collingwood. This misinterpretation has been corrected largely through the work of Schuchert[4].

As already intimated, several of the lithologic divisions of the Clinton as it occurs both at its type locality and at Rochester, N.Y., are wanting in the Niagara section. This is particularly true of the shales, sandstones, and iron ores. Accordingly, the Clinton, at Niagara, has changed from a series of alternating shales, limestones, and sandstones to a relatively thin band consisting chiefly of limestone. A study of the works above cited forces the conclusion that the absence of the several divisions is due to a pinching out rather than to lateral change, so that in the Niagara section at least one disconformity may be represented that is occupied by shale farther east.

[1] Vanuxem, L.: Geol. of Third District, N.Y., 1842, pp. 79-90.
[2] Hall, James: Geol. of Fourth District, N.Y., 1843, pp. 58-79.
[3] Logan, Wm. E.: Geol. of Canada, 1863, pp. 312-315.
[4] Schuchert, C.: Bull. Geol. Soc. Am., vol. 25, 1914, p. 279.

Of the several divisions recognized by Chadwick[1] at Rochester, only three with certainty, and a fourth doubtfully, are reported to occur at Niagara River by Williams.[2] These, in ascending order, are: the Furnaceville beds, Reynales dolomite; and the Irondequoit dolomite; the Williamson shale being doubtfully present between the Reynales and Irondequoit.

Wherever the Clinton is known in the present area, whether from outcrops or from well cuttings, it appears as essentially a uniform lithological unit. For this reason it is proposed to first discuss the formation as a whole before describing the various subdivisions mentioned above.

Distribution. The Clinton formation extends along the face of the Niagara escarpment from Niagara River to a short distance north of Dundas, where it pinches out and disappears. Throughout this distance complete sections are exposed and may be studied at the following localities:

1. At Niagara River along the New York Central and Hudson River Railway above Lewiston.
2. About 2½ miles south of St. Catharines where the road between lots 17 and 18, Grantham township, cuts the escarpment.
3. On Fifteenmile Creek at Rockway.
4. On Twentymile Creek south of Jordan.
5. At Grimsby in the gorge of Fortymile Creek.
6. Along the Toronto, Hamilton, and Buffalo Railway between Fruitland and Vinemount.
7. About one mile south of Fruitland where the road between lots 16 and 17, Saltfleet township, cuts the escarpment.
8. At Stoney Creek.
9. At Hamilton where highway 20A ascends the mountain.
10. At Webster Falls near Dundas.

Well records show that the formation extends beneath younger rocks throughout all that part of the area between Lake Ontario and Lake Erie.

Lithology and Thickness. As seen in outcrops the Clinton formation is essentially a mass of dolomitic limestone or dolomite, in beds from 3 inches to 6 feet in thickness, the thinner beds occupying the lower part, with thin, grey shale partings confined to the lower half of the formation. The lower, thinner beds are in most places dark grey in colour and dense in texture, the upper, massive beds being as a rule light grey and coarsely crystalline with a profusion of crinoid columns and, locally, brachiopods. At Niagara River and for some miles westward along the escarpment, the lower few feet of the formation is a grey or greenish shale; this shale disappears before Hamilton is reached.

Although the lower dense and upper coarse dolomites in general appear to represent continuous deposition, they can be easily recognized when seen separately; they indicate different physical environments at the time of deposition. These two divisions are the Reynales and Irondequoit members, respectively, and it is probable that a disconformity exists between them, which is occupied by as much as 24 feet of shale (Williamson) at Rochester, N.Y.

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[1] Chadwick, G. H.: Bull. Geol. Soc. Am., vol. 29, 1918, pp. 327-368.
[2] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 47.

The detailed lithology of the Clinton as a whole and of the various subdivisions as each is exposed at different localities between Niagara River and Dundas can best be illustrated by the following sections:

	Feet	Inches
1. Section at Niagara River, along the New York Central and Hudson River Railway above Lewiston.		
Massive, light grey, coarsely crystalline limestone in beds from 4 to 6 feet thick. Profusion of crinoid columns and many brachiopods (Irondequoit)	11	0
Fine, dense, medium to dark grey, dolomitic limestone in even beds from 2 to 12 inches thick; thin, grey, shale partings (Reynales)	13	0
Medium to dark grey, fissile shale (Furnaceville)	3	0
2. Section 2½ miles south of St. Catharines.		
Massive, hard, coarsely crystalline limestone. Many crinoid columns and brachiopods (Irondequoit)	5	0
Fine, grey, dolomitic limestone in beds from 3 to 10 inches thick. Thin, grey, shale partings toward the base (Reynales)	15	0
Soft, grey shale (Furnaceville)	1	0
3. Section on Fifteenmile Creek at Rockway.		
Massive, medium grey, coarsely crystalline limestone with profusion of crinoid stems and brachiopods (Irondequoit)	7	0
Soft, grey shale	0	3
Dense, grey to bluish, dolomitic limestone in beds from 3 to 15 inches thick, with thin seams of grey shale in lower half (Reynales)	9	0
Soft, bluish grey shale (Furnaceville)	0	6
4. Section on Twentymile Creek south of Jordan.		
Massive, coarsely crystalline, crinoidal limestone (Irondequoit)	3	0
Grey, impure limestone with thin, grey, shale partings (Reynales)	14	0
5. Section at Grimsby in gorge of Fortymile Creek.		
Massive, medium grey, coarsely crystalline, crinoidal limestone. Many brachiopods (Irondequoit)	4	0
Dark grey, dense limestone in even beds from a few inches to 1 foot thick	9	0
6. Section along Toronto, Hamilton, and Buffalo Railway between Fruitland and Vinemount.		
Massive, light grey, coarsely crystalline, crinoidal limestone (Irondequoit)	4	0
Dense, dark grey, dolomitic limestone with thin, grey, shale partings	9	0
7. Section one mile south of Fruitland where road ascends escarpment.		
Massive, light grey, coarsely crystalline limestone with profusion of crinoid stems (Irondequoit)	3	0
Thinner bedded, dense, and darker grey, dolomitic limestone	12	0
8. Section at Stoney Creek.		
Thick-bedded, dark grey, porous dolomite with thin, grey, shale partings	12	6

	Feet	Inches
9. Section at Hamilton where highway 20A ascends the mountain.		
Massive, dark and light grey, porous dolomite (Irondequoit)	4	0
Grey, dense, dolomitic limestone in beds about 18 inches thick, thinner toward the base with grey shale partings (Reynales)	6	0
Light grey, dense limestone (Pentamerous)	2	0
10. Section at Webster Falls near Dundas.		
Massive, light grey, coarsely crystalline dolomite (Irondequoit)	8	0
Dense, dark grey dolomite in thinner, even beds	5	0

The most northerly exposure of undoubted Clinton strata is in an abandoned quarry on lot 16, con. I, N.D.S., Nelson., tp., where the following section occurs:

	Feet	Inches
Grey shale	0	2
Dark grey, crystalline limestone in irregular beds	1	0
Dark grey, fissile shale	0	3
Massive bed dark grey, coarsely crystalline dolomite with bluish colour streaks	4	4
Hard, dense, bluish grey limestone	1	3
Bluish grey shale	0	2
Hard, dark grey limestone or dolomite in beds from 12 to 15 inches thick. Thin, blue, shale partings	5	0

The following table summarizes the thickness of the Clinton as a whole, and of its various divisions as measured at each of the above localities:

—	Section	Furnaceville		Reynales		Williamson?		Irondequoit		Total	
		Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
Niagara River	1	3	.....	13	.....	.....	.....	11	.....	27	.....
South of St. Catharines.	2	1	.....	15	.....	.....	.....	5	.....	21	.....
Rockway	3	0	6	9	.....	0	3	7	.....	16	9
Jordan	4	.....	.....	14	.....	.....	.....	3	.....	17	.....
Grimsby	5	.....	.....	9	.....	.....	.....	4	.....	13	.....
T.H.B. Railway	6	.....	.....	9	.....	.....	.....	4	.....	13	.....
Fruitland	7	.....	.....	12	.....	.....	.....	3	.....	15	.....
Stoney Creek	8	.....	.....	.....	.....	.....	.....	.....	.....	12	6
Hamilton	9	.....	.....	6	.....	.....	.....	6	.....	12	.....
Dundas	10	.....	.....	5	.....	.....	.....	8	.....	13	.....

This summary indicates that the lower shale division (Furnaceville beds) extends from Niagara River westward to the vicinity of Rockway, and that at only one place (Rockway) was there observed any evidence of shale intervening between the Reynales and Irondequoit divisions. It shows, also, that as seen along the escarpment between Rockway and Dundas, the Clinton is essentially a dolomitic or limestone succession comprising the Reynales and Irondequoit divisions as recognized by previous workers.

It seems worth noting here that the few feet of shale initiating the Clinton at Niagara, and which has been referred to as the Furnaceville by

both Chadwick[1] and Williams[2], has been given a new name by Sandford[3]. That author does not believe "that at present any positive correlation of the lower Clinton shale is possible either on palæontologic or stratigraphic grounds" and proposes the term Neahga (Niagara River) to be used as a local name implying no correlation.

Examination of well samples shows that the lithology as seen at the outcrop continues without any material change throughout the Niagara Peninsula. In some of the wells it is not possible to separate the Clinton from the underlying Thorold sandstone; both are commonly lumped together by the drillers and logged under the term Clinton.

In well samples, the Clinton appears as a light grey to almost white, fine to coarsely crystalline dolomite with varying quantities of dark, limy shale, particularly in the lower part, and, in some wells, considerable quantities of pyrite throughout. The horizon is easily recognized, being consistently overlain by the dark grey Rochester shale. The following table shows the thickness and lithology throughout the Niagara Peninsula:

County	Township	Thickness	Lithology
		Feet	
Wentworth	Glanford	30	Light grey, crystalline dolomite—little grey sandstone at base (Thorold).
Wentworth	Beverly	35	Light grey, coarsely crystalline dolomite—minor amount of darker, limy shale. Some pyrite.
Lincoln	Caistor	30	Light grey, finely crystalline dolomite with small amount grey, limy shale.
Wellington	Puslinch	.....	Not differentiated from Lockport.
Wellington	Eramosa	10	Medium grey, crystalline dolomite with considerable quantity of pyrite.
Welland	Humberstone	30	Light grey, coarsely crystalline dolomite—some sandstone at base (Thorold).
Welland	Wainfleet	30	Light grey, finely crystalline dolomite with minor amount of dark grey shale. Pyrite in lower 5 feet.
Haldimand	Canborough	30	Light grey, finely crystalline dolomite with little grey shale. Small amount white sandstone at base (Thorold).
Haldimand	Dunn	20	Light grey, crystalline dolomite with little dark grey, limy shale. Pyrite throughout.
Haldimand	Sherbrooke	35	Light grey, finely crystalline dolomite with little dark grey, limy shale.
Haldimand	Rainham	14	Light grey, crystalline dolomite with pyrite throughout.

Fauna. The fauna of the Clinton formation is not large, but although most of the invertebrate phyla are represented, by far the greater number of the individuals belong to the Brachiopoda. According to Williams[4], *Hyattidina congesta* and *Stricklandinia canadensis* are guide fossils to the Reynales dolomite. That author also states that the fauna of the Ironde-

[1] Chadwick, G. H.: Bull. Geol. Soc. Am., vol. 29, 1918, p. 344.
[2] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 47.
[3] Sandford, J. T.: Jour. Geol., vol. 43, 1935, p. 173.
[4] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 48.

quoit dolomite is closely related to that of the overlying Rochester formation, and that reef structures in the Irondequoit represent transitional conditions between the two. The following lists taken from Williams[1] represent the Clinton fauna as worked out by him, including various forms reported by Grabau.

Furnaceville Fauna of Niagara River

Buthotrephis gracilis (Hall) G.
Rhynchotreta cuneata americana (Hall)
Coelospira hemispherica (Sowerby) G.
Pterinea emacerata (Conrad)
Ctenodonta elliptica (Hall)?
Cuneamya alveata Whitfield and Hovey
Orthoceras 2 species.

G. Reported by Grabau.

Fauna of Reynales Dolomite

Genera and species	Niagara	Thorold	DeCew Falls	Grimsby	Hamilton	Dundas	Kelso
PLANTS							
Buthotrephis gracilis (Hall)	xg	....	....	....	....	....	....
ANTHOZOA							
Zaphrentis turbinata (Hall)	....	?	....	....	....	....	....
Favosites niagarensis (Hall)	....	....	....	....	....	?	....
BRYOZOA							
Lichenalia concentrica (Hall)	xg	....	....	....	....	....	....
BRACHIOPODA							
Stropheodonta profunda (Hall)	g	....	....	....	....	....	....
Strophonella patenta (Hall)	g	....	....	....	....	....	....
Plectambonites transversalis (Wahlenberg)	....	x	....	....	....	....	....
Schuchertella subplana (Hall)	....	x	....	....	....	....	....
Platystrophia biforata (Schlotheim)	x	....	....	....	....	....	....
Stricklandinia canadensis (Billings)	....	....	....	x	x	....	....
Pentamerus oblongus Sowerby	....	x	x	x	x	....	x
Camarotoechia neglecta (Hall)	xg	....	....	....	....	....	....
Spirifer radiatus (Sowerby)	....	x	....	....	....	....	....
Hyattidina congesta (Conrad)	xg	....	....	....	....	....	....
Coelospira plicatula (Hall)	g	....	....	....	....	....	....
GASTEROPODA							
Diaphorostoma niagarense (Hall)	....	x	....	....	....	....	....
CEPHALOPODA							
Actinoceras vertebratum (Hall)	....	....	....	x	....	....	....
TRILOBITA							
Encrinurus ornatus Hall and Whitfield	....	....	....	....	....	....	....

g Reported by Grabau. x Found by the author.

[1] Williams, M. Y.: Op. cit., pp. 48-51.

Irondequoit Fauna

Genera and species	Niagara River		DeCew Falls
	Bedded	Reefs	Bedded
ANTHOZOA			
Enterolasma caliculum (Hall)	g	.....	.....
CRINOIDEA			
Glyptocrinus plumosus (Hall)	g	.....	.....
GRABAU AND SHIMER			
Eucalyptocrinus caelatus levis	.....	g	.....
BRYOZOA			
Lichenalia concentrica Hall	.....	g	.....
BRACHIOPODA			
Leptaena rhomboidalis (Wilckens)	xg	g	x
Stropheodonta profunda (Hall)	g	.....	x
Strophonella? patenta (Hall)	xg	g	x
Plectambonites transversalis (Wahlenberg)	.....	g	.....
Schuchertella subplana (Hall)	xg	g	.....
Orthis flabellites Foerste	g	.....	.....
Dalmanella elegantula (Dalman)	x	g	x
Rhipidomella hybrida (Sowerby)	.....	.....	?
Anastrophia interplicata (Hall)	.....	g	.....
Pentamerus oblongus Sowerby	g	.....	.....
Clorinda fornicata (Hall)	xg	.....	.....
Rhynchotreta cuneata americana (Hall)	.....	g	.....
Rhynchotreta robusta (Hall)	x	.....	.....
Camarotoechia neglecta (Hall)	.....	g	.....
Camarotoechia? acinus (Hall)	g	.....	.....
Atrypa reticularis (Linnaeus)	xg	g	x
Atrypa nodostriata Hall	x	g	.....
Atrypa rugosa Hall	.....	g	.....
Spirifer radiatus (Sowerby)	xg	g	x
Spirifer niagarensis (Conrad)	xg	g	x
Spirifer crispus (Hisinger)	.....	g	.....
Spirifer corallinensis (Grabau)	g	.....	.....
Spirifer sulcatus (Hisinger)	.....	g	.....
Whitfieldella nitida (Hall)	.....	g	.....
Whitfieldella nitida oblata (Hall)	xg	g	x
Whitfieldella cylindrica (Hall)	xg	.....	x
PELECYPODA			
Pterinea brisa Hall	.....	.....	Hamilton?
GASTEROPODA			
Diaphorostoma niagarense (Hall)	.....	g	.....
CEPHALOPODA			
Dawsonoceras americanum (Foord)	.....	.....	x
TRILOBITA			
Bumastus ioxus (Hall)	g	g	.....
Calymene niagarensis Hall	g	.....	.....

g Reported by Grabau x Found by author.

ROCHESTER FORMATION

Definition. The term Rochester shale seems first to have been used by Hall in 1838, the rock being better developed at Rochester than at any other place in the Fourth District. Hall[1] subsequently called these rocks Niagara shale, a term that persisted until Clarke and Schuchert[2] revised the nomenclature of the New York sequence when the term Rochester shale was revived.

The formation occupies a position between the Clinton below and the Lockport formation above.

Distribution. The Rochester formation has essentially the same distribution as the underlying Clinton, following the Niagara escarpment westward from Niagara River to Dundas, a short distance north of which it disappears. The shales are exposed at various places along the escarpment, complete sections being visible at the following localities: Niagara River; DeCew Falls; Fifteenmile Creek at Rockway; Fortymile Creek at Grimsby; along the Toronto-Hamilton and Buffalo Railway between Fruitland and Vinemount; about one mile south of Fruitland where the road between lots 16 and 17, Saltfleet township, cuts the escarpment; Stoney Creek; Hamilton (highway 20A); and Webster Falls near Dundas.

Drilling records show the formation to extend beneath younger strata throughout the Niagara Peninsula.

Lithology. The thickest total section of Rochester shale is on Niagara River. There, the formation consists of 63 feet of soft, grey or bluish grey, finely laminated, argillaceous shale with thin (1- to 3-inch) beds of hard grey limestone, particularly in the middle and lower part of the succession. Tracing the formation westward along the escarpment, the calcareous beds become more numerous, thicker, and practically confined to the upper one-third of the formation. These changes increase the difficulty in drawing a definite upper boundary on purely lithologic grounds in the vicinity of Hamilton and Dundas. The following sections, taken in order from Niagara River to Dundas, will indicate the changes observed.

	Feet
Section at DeCew Falls.	
Dark grey, thinly bedded, fissile shale with thin (2- to 5-inch) calcareous beds toward the top	46
Section on Fifteenmile Creek at Rockway.	
Dark grey, thinly bedded, argillaceous shale with thin, argillaceous limestone beds, particularly in the upper part	46
Section on Fortymile creek at Grimsby.	
Thin-bedded, dark grey, argillaceous limestone with grey shale interbeds	18
Dark grey, soft, argillaceous shale with thin beds (1- to 3-inch) of grey limestone in upper part	27
Total	45

[1] Hall, James: Geol. of New York, 1843, p. 81.
[2] Clarke, J. M., and Schuchert, C.: Science, Dec. 15, 1899, p. 876.

	Feet
Section along Toronto Hamilton and Buffalo Railway between Fruitland and Vinemount.	
Buff-weathered, hard, compacted, grey, calcareous shale..	10
Thinly laminated, dark grey, argillaceous shale with occasional thin limestone bands.....	18
Total	28
Section one mile south of Fruitland.	
Thinly but roughly bedded, dark grey, sandy and calcareous, compacted shale.....	13
Dark grey, fissile, argillaceous shale with thin, impure limestone bands throughout.....	18
Total	31
Section at Stoney Creek.	
Dark grey, sandy limestone in beds up to 8 inches thick, with dark grey shale interbeds.....	8
Dark grey, compacted, thinly bedded, sandy shale with occasional thin even beds of limestone containing chert..	14
Total	22
Section at Hamilton.	
Thinly and roughly bedded, dark grey, sandy shale with dark grey shale partings.....	10
Dark grey, thinly bedded, sandy shale with frequent thin (1- to 5-inch) bands of grey limestone.....	8
Total	18
Section at Webster Falls.	
Dark grey, soft, fissile shale with 2-inch beds of dark grey, sandy limestone.....	5

An examination of boring samples shows that the general lithology as seen on the outcrop continues with no essential change throughout the Niagara Peninsula. In the well samples, the formation appears as a dark grey, somewhat limy shale with, in some wells, a small amount of shaly dolomite or limestone near the top. This calcareous content represents the limestone bands as seen on the outcrop. The Rochester horizon is easily recognized by drillers, being consistently preceded by light grey, crystalline Lockport dolomite and followed by light grey to white Clinton dolomite. The following table indicates the lithology and thickness of the Rochester shale as seen in well samples:

County	Township	Thickness	Lithology
		Feet	
Wentworth	Glanford	20	Dark grey, limy shale; little brown dolomite.
Wentworth	Beverly	—	Not recognizable.
Lincoln	Caistor	40	Medium to dark grey shale with a little limestone about middle of interval.
Wellington	Puslinch	—	Rochester absent.
Wellington	Eramosa	—	"
Welland	Humberstone	50	Dark grey, limy shale.
Welland	Wainfleet	30	Medium grey, limy shale.
Haldimand	Canborough	50	Medium grey, limy shale with minor amount of shaly dolomite near top.
Haldimand	Dunn	40	Fairly dark grey shale with minor amount of grey, finely crystalline dolomite.
Haldimand	Sherbrooke	45	Fairly dark grey, limy shale.
Haldimand	Rainham	55	Dark grey, limy shale.
Brant	Onondaga	45	Dark grey, limy shale.

As displayed along the face of the escarpment, the Rochester thins from 63 feet at Niagara River to about 5 feet at Dundas. This information and the well log thicknesses in the above table indicate a general thinning of the formation from southeast to northwest across the Niagara Peninsula.

Rochester-Clinton Contact. Wherever it has been seen, the Rochester shale rests directly upon the Irondequoit division of the Clinton formation with sharp, even contact. Williams[1] states that the contact is a gradation from shaly dolomite to shale; such a condition was not observed by the writer, for at every locality seen by him, even at Niagara River where the lower part of the Rochester contains many calcareous beds, the underlying Irondequoit is a massive (up to 6 feet) crinoidal dolomite, thus presenting an abrupt lithologic change between it and the overlying Rochester shale. This abrupt change in sedimentation does not of necessity indicate disconformity, but it would seem that a marked shifting of the strand line is indicated.

Along the New York Central and Hudson River Railway above Lewiston are several places where the Irondequoit contains reef-like amorphous structures; some of these project into the overlying Rochester shale, a condition probably due to the reef "growing" more rapidly than the adjacent sediments accumulated. Both Williams[2] and Kindle[3] state that the fauna of the reefs is more closely related to that of the overlying Rochester than to the enclosing Irondequoit dolomite; this would point to conformable relations between the two formations.

In every well boring examined by the writer, the samples show an abrupt change from grey, crystalline dolomite (Lockport) to dark grey, limy shale of the Rochester.

[1] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 53.
[2] Williams, M. Y.: Op. cit., p. 53.
[3] Kindle, E. M.: U.S. Geol. Surv., Folio 190, 1913, p. 7.

Fauna and Correlation. The Rochester formation is rich in fossils and has yielded probably a greater number of species than any other single Silurian formation. More than 80 species of Bryozoa alone have been described by Bassler. The following table is taken from Williams[1], and includes as well forms collected by that author, and certain species listed by Grabau[2] and by Bassler[3].

Genera and species	Niagara River		Thorold		DeCew Falls	Grimsby			Hamilton	Waterdown
	Lower	Upper	Lower	Upper		Lower	Upper	Loose		
PLANTS										
Buthotrephis gracilis (Hall)	....	....	x	....	.....	....	....	....	.....	.....
HYDROZOA										
Dictyonema retiforme (Hall)	g	....	x	....	.....	....	....	....	.....	.....
Dictyonema gracile Hall	....	....	....	....	.....	x	....	....	.....	.....
ANTHOZOA										
Enterolasma caliculum (Hall)	xg	....	....	x	.....	x	x	....	.....	.....
Zaphrentis turbinata (Hall)	x	....	....	....	.....	....	....	....	.....	.....
Favosites hisingeri Edwards and Haime	g	....	....	....	.....	....	....	x	.....	.....
Favosites niagarensis Hall	x	....	....	....	.....	x	....	....	.....	.....
Cladopora seriata Hall	g	....	....	....	.....	....	....	....	.....	.....
Striatopora flexuosa Hall	g	....	....	....	.....	....	....	....	.....	.....
CYSTOIDEA										
Caryiocrinites ornatus Say[2]	xg	....	x	....	.....	x	x	x	.....	.....
CRINOIDEA										
Stephanocrinus angulatus Conrad Grabau and Shimer[2]	xg	....	....	....	.....	....	....	x	.....	.....
Eucalyptocrinus caelatus levis	g	....	....	....	.....	....	....	x	.....	.....
Ichthyocrinus laevis Conrad	g	....	....	....	.....	....	....	....	.....	.....
ANNELIDA										
Cornulites bellistriatus Hall	g?	....	....	....	.....	....	....	x	.....	.....
BRYOZOA										
Chilotrypa osteolata (Hall)[1]	g	....	....	b	.....	....	b	....	b	.....
Batostomella granulifera (Hall)[1]	g	....	....	b	.....	....	b	....	b	.....
Nicholsonella florida (Hall)[1]	g	....	....	....	.....	....	....	....	.....	.....
Trematopora tuberculosa Hall[1]	g	....	....	b	.....	....	b	....	.....	.....
Hallopora elegantula (Hall)[1]	g	....	....	b	.....	....	b	....	b	.....
Chasmatopora asperatostriata (Hall)[1]	g	....	....	b	.....	....	....	....	.....	.....
Pseudohornera diffusa (Hall)[1]	g	....	....	....	.....	....	b	....	.....	.....
Fenestella elegans Hall[1]	g	....	....	b	.....	....	b	....	b	.....
Semicoscinium tenuiceps Hall[1]	g	....	....	....	.....	....	b	....	.....	.....
Polypora incepta Hall[1]	g	....	....	....	.....	....	b	....	.....	.....
Clathropora alcicornis Hall[1]	g	....	....	....	.....	....	....	....	.....	.....
Diamesopora dichotoma Hall[1]	g	....	....	....	.....	....	b	....	b	.....
Lichenalia concentrica Hall	xg	....	....	....	.....	....	bx	....	.....	.....

[1] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, pp. 54-56.
[2] Grabau, A. W.: N.Y. State Mus., Bull. 45, 1901.
[3] Bassler, R. S.: U.S. Geol. Surv., Bull. 292, 1906.

Genera and species	Niagara River		Thorold		DeCew Falls	Grimsby			Hamilton	Waterdown
	Lower	Upper	Lower	Upper		Lower	Upper	Loose		
BRACHIOPODA										
Lingula clintoni Vanuxem	....	....	....	....	x	....	....	....	.....	.....
Lingula acutirostris Hall	....	....	....	....	x	....	....	....	.....	.....
Pholidops squamiformis (Hall)[1]	g	....	....	....	.....	....	....	....	.....	.....
Dictyonella corallifera (Hall)[1]	g	....	....	....	.....	....	....	....	.....	.....
Leptaena rhomboidalis (Wilckens)	xg	g	x	x	x	x	x	x	.....	x
Strophonella striata (Hall)	xg	g	....	....	x	....	....	....	.....	.....
Strophonella? patenta (Hall)	xg?	....	....	....	.....	....	x	x	.....	.....
Strophonella decewensis Williams[1]	....	....	....	....	.....	x	....	....	.....	.....
Plectambonites transversalis (Wahlenberg)	xg	....	....	....	.....	x	x	x	.....	.....
Schuchertella subplana (Hall)	g	g	....	....	x	....	x	x	.....	x
Orthis flabellites Foerste	g	....	....	....	.....	....	....	x	.....	.....
Schizophoria punctostriata Hall	xg?	....	....	....	.....	....	....	....	.....	.....
Orthostrophia fasciata Hall	?	....	....	....	.....	....	....	x	.....	.....
Dalmanella elegantula (Dalman)	xg	....	....	....	.....	x	x	x	.....	.....
Rhipidomella hybrida (Sowerby)	xg	g	....	x	.....	x	x	x	.....	.....
Anastrophia interplicata (Hall)	g	....	....	....	.....	....	....	....	.....	.....
Rhynchotreta cuneata americana (Hall)	xg	g	....	....	x	....	....	....	.....	.....
Rhynchotreta robusta (Hall)	x	....	....	....	.....	....	....	....	.....	.....
Camarotoechia obtusiplicata (Hall)[1]	xg	....	....	....	.....	x	x	x	.....	.....
Camarotoechia neglecta (Hall)	xg	g	x	x	.....	....	....	x	.....	.....
Atrypa reticularis (Linnaeus)	xg	....	....	x	.....	x	x	....	.....	.....
Atrypa nodostriata Hall	xg	....	....	....	.....	....	....	....	.....	.....
Atrypa rugosa Hall	g	....	....	....	.....	....	....	....	.....	.....
Spirifer radiatus (Sowerby)	xg	....	x	....	.....	....	x	x	.....	.....
Spirifer niagarensis (Conrad)	xg	....	x	....	x	x	x	x	.....	.....
Spirifer crispus (Hisinger)	xg	....	x	....	.....	....	....	x	.....	.....
Spirifer corallinensis (Grabau)	g	....	....	....	.....	....	....	....	.....	.....
Spirifer sulcatus (Hisinger)	g	....	....	....	.....	....	....	....	.....	.....
Trematospira camura Hall	g	....	....	....	.....	....	....	....	.....	.....
Whitfieldella nitida (Hall)	g	....	....	....	x	....	....	....	.....	.....
Whitfieldella nitida oblata (Hall)	xg	x	....	....	.....	x	x	x	.....	.....
Whitfieldella intermedia (Hall)	xg	....	....	....	.....	....	....	....	.....	.....
Whitfieldella cylindrica (Hall)	xg	....	....	....	.....	....	....	....	x	x
PELECYPODA										
Pterinea emacerata (Conrad)	g	xg	....	....	x	....	....	....	.....	.....
Pterinea undata (Hall)	....	....	....	....	x	....	....	....	.....	.....
Leiopteria subplana Hall	g	....	....	....	.....	....	....	....	.....	.....
GASTEROPODA										
Platyceras angulatum (Hall)[1]	xg	....	....	....	x	....	....	....	.....	.....
Diaphorostoma niagarense (Hall)	xg	g	....	....	.....	....	x	x	.....	.....
Diaphorostoma hemisphericum (Hall)[1]	....	....	....	....	.....	x	....	....	.....	.....
CONULARIA										
Tentaculites niagarensis Hall[1]	x	....	....	....	.....	....	....	....	.....	.....
Tentaculites minutus Hall	x	....	....	....	.....	....	....	....	.....	.....
CEPHALOPODA										
Orthoceras unionense Worthen	....	....	....	....	x	....	....	....	.....	.....
Kionoceras cancellatum (Hall)	....	...	....	....	?	....	....	....	.....	.....
OSTRACODA										
Aechmina spinosa (Hall)	xg?	x	....	....	.....	....	....	....	.....	.....

Genera and species	Niagara River		Thorold		DeCew Falls	Grimsby			Hamilton	Waterdown
	Lower	Upper	Lower	Upper		Lower	Upper	Loose		
TRILOBITA										
Homalonotus delphinocephalus (Green)[2].	g	g	....	x	x	....	....	....	.....	.....
Bumastus ioxus (Hall).....	xg	....	....	....	.....	x	x	....	.....	.....
Dalmanites limulurus (Green)[2].....	xg	xg	....	....	x	....	....	....	.....	.....
Calymene niagarensis (Hall).....	g	....	....	....	?	....	....	x	.....	x
Arctinurus boltoni (Bigsby)[1]	g	....	....	....	.....	....	....	....	.....	.....
Encrinurus ornatus Hall and Whitfield..	....	....	....	....	.....	:	x ..	....	.....	.....

[1], Found only in Rochester shale.
[2], Good guides to the Rochester.
g, Forms listed by Grabau.
b, Forms reported by Bassler.
x, Forms collected by Williams.

Chiefly on a basis of their bryozoan fauna, Bassler[1] concluded that the Rochester shale and the Osgood beds of Indiana are undoubtedly equivalents. He also suggests a close relation between the Rochester shale and the Buildwas beds of the Wenlock series of England.

Cumings and Shrock[2] consider it not at all unlikely that the Rochester may be represented in the lower part of the Mississinewa formation of northern Indiana.

LOCKPORT FORMATION

Definition. The term Lockport is derived from Lockport, N.Y., where these rocks were described by Hall as early as 1838. In his 1843 report, Hall[3] refers to these rocks as Niagara limestones, being the upper division of the Niagara group, but the term Lockport was later revived by Clarke and Schuchert[4] and still persists.

The Lockport formation rests upon Rochester shale throughout the Niagara Peninsula. Northward from the vicinity of Waterdown, however, it rests directly upon the Medina formation, due to the absence of both Rochester and Clinton strata in that part of the area. It is everywhere overlain by Guelph dolomite.

Distribution. The Lockport formation is the upper cliff-forming member of the Niagara escarpment; it extends as an almost unbroken exposure from Niagara River to the north boundary of the area, although from Credit Forks northward it loses its bold face and occurs as a series of detached outcrops showing only a few feet of the rock. It underlies the entire country west of the escarpment between the north limit of the area and Dundas, and continues eastward to Niagara River as a belt varying from about 1 to 5 miles in width. Its extension beneath younger rocks throughout the Niagara Peninsula is shown by drilling records.

[1] Bassler, R. S.: U.S. Geol. Surv., Bull. 292, p. 5.
[2] Cumings, E. R., and Shrock, R. R.: Dept. Cons. Div. Geol., Indiana, Pub. 75, 1928, p. 63.
[3] Hall, James: Geol. of New York, 1843, p. 84.
[4] Clarke, J. M., and Schuchert, C.: Science, Dec. 15, 1899, p. 876.

Lithology and Subdivision. The Lockport formation shows considerable variation in bedding, texture, and colour from place to place throughout the area. This is rather to be expected in view of the considerable thickness of the formation.

The Lockport is essentially a thick series of magnesium limestone or dolomite, commonly light grey to bluish, fine to coarsely crystalline, in places quite porous, and disposed in beds from 2 to 4 feet thick with both thicker and thinner beds locally developed, the whole commonly weathering light grey or even white.

This description is particularly applicable in the region northward from Dundas. Between Niagara River and Dundas more or less definite lithologic variations are present, and upon these differences the formation has been divided into members; these, in ascending order, will be described below.

DeCew Member

Definition. The term DeCew limestone was proposed by Williams[1] for the basal beds of the Lockport formation in the Niagara Peninsula. The type section is exposed at DeCew Falls.

Distribution. The DeCew member is easily recognizable from Niagara River westward to Rockway. Between this locality and Hamilton it does not form such a distinct unit, although its presence is suggested as a transition between the calcareous upper part of the Rochester and the typical Lockport dolomite. North of Hamilton it has not been identified by the writer, but Williams[2] suggests its occurrence as far north as Limehouse. The member is well exposed at Niagara River; where the highway between lots 16 and 17, Grantham township, ascends the escarpment (2½ miles south of St. Catharines); at DeCew Falls; and on Fifteenmile Creek at Rockway.

Lithology. The DeCew beds consist of medium to dark grey, fine, dense, argillaceous limestone, commonly weathered dark grey or even buff. At some localities the lower foot or two is thinly but irregularly bedded, whereas the upper part is in beds upwards of 2 feet thick. At other localities the entire member appears as a single unit, bedding planes being obscured by conchoidal outlines and concretionary shapes, indicating deposition in relatively shallow water that was subjected to frequent disturbances. The argillaceous character of the member suggests reworking of the Rochester to which lime has been added, and, as suggested by Williams[3], the effects of wave action at the bottom of a shallow sea containing mud might give the required conditions. In such a case, no time break need be postulated between the Rochester and Lockport formations, although changing conditions of sedimentation are definitely indicated.

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[1] Williams, M. Y.: Geol. Surv., Canada, Sum. Rept. 1913, p. 186.
[2] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 58.
[3] Williams, M. Y.: Geol. Surv., Canada, Sum. Rept. 1913, p. 187.

Thickness. The thickness of this member has been measured at several localities, with the following results: 12 feet at Niagara River (above Lewiston along the New York Central and Hudson River Raliway); 7½ feet south of St. Catharines; 8½ feet at DeCew Falls; and 5½ feet on Fifteenmile Creek at Rockway.

Gasport Member

Definition. The term Gasport was erected by Kindle[1] for the coarse limestone overlying the basal Lockport beds and typically exposed at Gasport, N.Y.

Lithology, Distribution, Thickness. According to Kindle[2], at its type locality the Gasport member is a light grey to white, coarse-grained, semi-crystalline, pure limestone full of fragments of crinoid stems. The crinoid plates and stems and the other fossils give it a distinctly different appearance from the beds above and below, which are only sparingly fossiliferous. At Niagara River the Gasport is wholly dolomitic, but retains its usual crinoidal character.

It would appear from the foregoing description that the member is differentiated from the overlying rock chiefly by its crinoidal and semi-crystalline character, and should these characters fail it would be practically impossible to draw an upper limit for the member.

Following the escarpment westward from Niagara River to Dundas, the Gasport horizon is occupied by a light grey to white, medium to coarsely crystalline dolomite, in beds from 1 to 6 feet thick. A profusion of broken crinoid stems occurs locally, but is not universal. Wherever the DeCew member is distinguishable, the massive dolomite immediately overlies it, and in those localities where the Rochester shale appears to grade into the Lockport through an argillaceous limestone zone, the crinoidal rock immediately follows this transition.

At several localities along the escarpment, the thick-bedded dolomites are overlain directly by much thinner bedded, fine dolomite containing an abundance of chert; these beds are readily recognized and where they occur can be used to mark the upper limit of the Gasport horizon. Where these beds are absent, it is more difficult to limit the Gasport, and the crinoidal character and thick bedding must be relied upon. The following are the thicknesses assigned to the Gasport horizon at several localities between Niagara River and Dundas: 14 feet at Niagara River; 11 to 14 feet at Grimsby; 16 feet at Dundas; 7 feet at Stoney Creek; and 16 feet at Ancaster.

"Undivided" Lockport and Eramosa Beds

Only at Dundas is there exposed a complete section of the Lockport strata lying between the Gasport below and the Guelph formation above. Elsewhere throughout Niagara Peninsula, various thicknesses of these upper Lockport rocks have been eroded away, leaving in many localities only a few feet of strata overlying the Gasport member.

Immediately overlying the Gasport member at Dundas is about 36 feet of medium grey to brown, dense dolomite, in uneven beds from 8 to 20 inches thick, containing a profusion of chert nodules varying from 2 to 5

[1] Kindle, E. M.: U.S. Geol. Surv., Folio 190, p 7.
Kindle, E. M.: Op. cit., p. 7.

inches across. The chert is dense, hard, and breaks with a conchoidal fracture, giving sharp splinters. On fresh surface it is dark grey or bluish, but on weathered surface it is light grey to almost white. The chert beds can be traced continuously along the summit of the escarpment from Ancaster eastward to near Vinemount station. From there to where the Grimsby Beach road ascends the escarpment, no chert is visible, but at this latter locality 15 feet of the chert beds are exposed. Eastward from there, the chert zone appears to pinch out rapidly, for only a few small nodules were observed immediately above the Gasport horizon in a quarry on lot 18, con. X, Grantham tp., and none at all occurs at Niagara River.

The following are thicknesses of the chert zone observed at several localities along the escarpment: Webster Falls, 26 feet; Clappison Corner, 8 feet; Hamilton, 10 feet; Ancaster, in road cut east of the village, 24 feet; Toronto, Hamilton, and Buffalo Railway cut west of Vinemount, 9 feet; and in the quarry on lot 18, con. X, Grantham, from 3 to 4 feet.

Above the chert beds at Dundas is a 25-foot vertical face, which is difficult of access. This cliff is composed of typical Lockport dolomite, medium to coarsely crystalline, light grey to bluish, in places weathered almost white, and in beds from 1 to 3 feet thick.

Overlying the cliff and readily accessible in the Canada Crushed Stone Quarry is about 68 feet of strata, the lower 58 feet of which forms the top of the Lockport, the upper 10 feet or so being referred to the Guelph formation.

The lower 58 feet is dark grey or bluish and brownish, dense dolomite, somewhat argillaceous, and disposed in beds from 6 inches to 3 feet thick, with dark grey to black, bituminous, shaly partings, especially toward the base. Small vugs, from 1 to 3 inches across, filled with white gypsum are common. The thinner beds are commonly near the base of the section and the bedding planes are locally quite wavy.

The upper 10 feet, here referred to the Guelph formation, is a brownish or chocolate coloured, fairly dense though sugary appearing dolomite in thick, irregular beds from 2 to 4 feet thick. These beds do not exhibit either the bituminous partings or the vugs of gypsum as seen in the lower part of the section. The following is the Lockport section as exposed at Dundas.

	Feet
Guelph formation	
Chocolate-coloured, dense though sugary appearing dolomite in irregular beds from 2 to 4 feet thick; weathered fairly light grey	10
Lockport formation	
Dark grey, bluish, and brownish, dense dolomite in beds from 6 inches to 2 feet thick, the thinner beds toward the base, and with black, bituminous, shaly partings. Small vugs filled with gypsum throughout (Eramosa beds)	58
Light grey to bluish, medium to coarsely crystalline dolomite in beds from 1 to 3 feet thick; weathered almost white (undivided Lockport)	25
Medium grey to brownish, dense dolomite in uneven beds from 8 to 20 inches thick, with a profusion of chert nodules (chert beds)	36
Light grey to bluish, coarsely crystalline dolomite in beds from 3 to 4 feet thick (Gasport member)	16

The upper 58 feet of the foregoing Lockport section comprises the Eramosa beds of Williams[1] and, according to that author, form a consistent member of the Lockport formation in Ontario. The Eramosa beds do not commonly outcrop on the face of the escarpment, and are not seen between Ancaster and Niagara River. At the latter locality, along the New York Central and Hudson River Railway above Lewiston, the Gasport member is overlain by about 33 feet of brownish grey and chocolate-coloured, dense dolomite in beds from 1 to 2½ feet thick. This rock emits a distinct petroliferous odour when struck. The upper part of this section is referable to the Eramosa, but the writer is unable to fix a lower limit for the member here.

Beginning in the old quarry just east of the village of Ancaster, and continuing north along the highway, the following section is exposed:

	Feet
Hard, brownish, dense dolomite in beds from 2 to 3 feet thick; weathered medium grey (Eramosa?)	23
Dense, brownish dolomite. Upper few beds 1 foot thick, becoming thinner below with wavy bedding planes appearing as dark lines due to thin partings of dark grey to black, bituminous shale. Emits strong petroliferous odour when struck (Eramosa)	20
Covered interval	56
Grey to brownish, dense, unevenly bedded dolomite in beds from 8 inches to 2 feet thick, with profusion of chert nodules (chert beds)	24
Light grey to white, coarsely crystalline dolomite in beds from 1 to 4 feet thick (Gasport member)	16
Thin-bedded, grey, argillaceous dolomite with thin, grey, shale partings (DeCew member)	7

The upper 43 feet of this section is referred to the Eramosa member, although some doubt exists in the mind of the writer regarding the age of the upper heavy beds; these may be basal Guelph.

Relation to Overlying Strata. In the present map-area, the upper limit of the Lockport is difficult to place. Wherever the contact zone has been seen the Guelph formation conformably overlies the typical, brown, bituminous dolomite of the Eramosa member. In general, the contact could be placed anywhere within what might be called a transition zone up to 10 feet thick, in which brownish, dense dolomite with black, bituminous partings passes upward into much thicker bedded, brownish grey to grey, granular textured and porous dolomite (Guelph) with little or no bituminous content. The contact zone is exposed at Niagara Falls, Dundas, Hannon, and Smithville.

At Guelph, the type locality of the Eramosa beds, the base of the Guelph is exposed. According to Williams[2], the lowest bed of the Guelph is about 2 feet thick and is bituminous, with an odour resembling that of petroleum. Shaw[3] states that about 19 feet up on the quarry wall at the Ontario Reformatory (Guelph) is a 2-foot bed showing curved lines of jointing above which the beds are less bituminous and "take on more of

[1] Williams, M. Y.: Geol. Surv., Canada, Mus. Bull. 20, 1915, p. 1; Geol. Surv., Canada, Mem. 111, 1919, p. 62.
[2] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 72.
[3] Shaw, E. W.: Trans. Roy. Can. Inst., vol. 21, pt. 2, 1937, p. 327.

a Guelph appearance." *Zaphrentis* cf. *racinensis* was observed above the 2-foot bed, and Shaw placed the contact immediately below the first appearance of that fossil.

At Dundas, in the Canada Crushed Stone Quarry, the upper 10 feet is thick-bedded (2 to 4 feet), brownish, granular textured dolomite, which is lithologically distinguishable from the underlying, thinner, dense beds with black, bituminous partings. The contact is here placed at the base of this upper, 10-foot zone.

On the north side of Spencer Creek, about ½ mile west of Greensville, the following section exposes a similar lithological change:

	Feet
Guelph formation	
Brownish grey, buff-weathered, vuggy, and porous dolomite	3½
Chocolate-coloured, finely granular dolomite in beds from 1 to 2 feet thick	8½
Lockport formation	
Brown, dense, hard dolomite in thin beds with black, bituminous partings towards the base. Emits petroliferous odour when struck (Eramosa beds)	18

The Wentworth County Quarry at Hannon exposes the following section:

	Feet
Guelph formation	
Brownish grey, finely granular, porous dolomite bed	3
Lockport formation	
Dark, bluish grey and brownish, dense dolomite in beds from 2 to 12 inches thick, with black, bituminous partings, which show as thin, wavy lines marking bedding planes (Eramosa beds)	21
Dark brownish to nearly black, argillaceous and bituminous dolomite, in thin, even beds (Eramosa beds)	4

The following section may be seen in an old quarry near the Toronto, Hamilton, and Buffalo Railway at Smithville.

	Feet
Guelph formation	
Hard, brownish grey, vuggy, finely granular and sandy appearing dolomite	2
Lockport formation	
Brownish, thick-bedded, finely granular dolomite with small vugs filled with white gypsum. *Favosites* sp. and *Stromatoporoids* common	6½
Hard, massive-appearing, brownish, dense dolomite, with thin, black, bituminous streaks. *Stromatoporoids*	3½

The upper bed of this section closely resembles those at the top of the Dundas section and is, therefore, placed in the Guelph formation. Although the bedding throughout this section is thick, much more bituminous matter occurs in the lower part and there is a noticeable change in lithology toward the top.

At Niagara Falls, N.Y., fairly thinly bedded, brown, bituminous dolomite occurs about 20 feet below the top of the section in the Gorge Route railway cut. These beds have the appearance of the typical Eramosa. These beds are overlain by thicker beds, also brownish, but less bituminous and more granular in texture. The lithological change

here is similar to that seen at other localities and, therefore, these upper beds are placed in the Guelph formation. Accepting this position for the Guelph-Lockport contact, the water of the American Falls is seen to flow over basal beds of the Guelph formation.

In all the foregoing sections, which are here interpreted as showing the upper limit of the Lockport formation, there is no indication of disconformity. There is, however, a decided change in lithology, which would indicate a widespread change in the basin of deposition.

The Lockport Formation in Well Samples. After examination of samples from thirty wells, chiefly in the Niagara Peninsula, no satisfactory criteria could be found upon which to separate the Lockport and overlying Guelph formations; all the strata between the Salina formation above and the Rochester shale below are the product of continuous sedimentation and are here logged as the Guelph-Lockport. In those wells that from field relations are known to start in Guelph rocks, it is, therefore, impossible, with any confidence, to know just how much to assign to each of the formations represented. Those wells that start in Lockport strata present a fairly uniform lithology throughout all the formation present. In general, the lithological divisions comprising the various Lockport members as seen on the exposure (DeCew, Gasport, Eramosa) cannot be distinguished in well samples, although in some wells colour and texture variations would suggest the presence of the various members. For example, a small amount of chert appears in a well in Humberstone township about 100 feet above the top of the Rochester shale; this suggests the chert beds as seen along the escarpment from Vinemount to Ancaster. In like manner, several wells show brownish, finely crystalline dolomite with black, bituminous coatings, which may represent the Eramosa horizon.

The base of the Lockport presents no difficulty in the well samples examined. In the Niagara Peninsula the dark grey Rochester shale immediately underlies the light grey, crystalline Lockport dolomite, the lithological difference being readily recognized. Northward from Dundas, where the Rochester shale and Clinton dolomite pinch out, the Lockport rests directly on Cabot Head shales; the lithological difference here again is distinct and the contact is readily placed.

The upper limit of the Guelph-Lockport, its lithology and thickness in well samples, will be discussed under Guelph formation.

Fauna. In the present map-area the Lockport is not exceptionally fossiliferous. In addition, the hard, crystalline dolomite renders collecting a difficult task. Many forms, as for example the crinoids, are represented by broken fragments of plates and stems, so that specific identification is in many instances impossible. Although practically all the invertebrate phyla are represented, corals are the most prolific individuals, with Brachiopods running a close second. The following list is taken from Williams[1] and includes forms reported by Parks, Grabau, Lambe, and in Bassler's Bibliographic Index, as well as those collected by that author.

[1] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 64.

PLANTS

Buthotrephis gracilis (Hall)
Buthotrephis gracilis crassa Hall

PORIFERA

Astylospongia praemorsa (Goldfuss)?

HYDROZOA

Dictyonema retiforme Hall
Dictyonema gracile Hall
Actinostroma whiteavesi niagarense Parks
Clathrodictyon vesiculosum Nicholson and Murie
Clathrodictyon striatellum (d'Orbigny)
Clathrodictyon ostiolatum (Nicholson)
Stromatopora constellata Hall
Stromatopora antiqua (Nicholson and Murie)
Ceramoporella? irregularis (Whitfield)

ANTHOZOA

Enterolasma caliculum (Hall)
Zaphrentis turbinata (Hall)
Cystiphyllum niagarense (Hall)
Cyathophyllum thoroldense Lambe
Synaptophyllum multicaule (Hall)
Diplophyllum caespitosum Hall
Favosites constrictus (Hall)
Favosites favosus (Goldfuss)
Favosites hisingeri Edwards and Haime
Favosites niagarensis (Hall)
Palaeofavosites asper d'Orbigny
Alveolites thoroldensis Parks
Coenites juniperinus Eichwald
Halysites catenularia (Linnaeus)
Halysites catenularia microporus (Whitfield)
Lyellia affinis (Billings)
Heliolites elegans Hall
Plasmopora follis Edwards and Haime
Protaraea walkeri (Spencer)

CYSTOIDEA

Caryocrinites ornatus Say

CRINOIDEA

Periechocrinus speciosus (Hall)
Ichthyocrinus laevis Conrad
Eucalptocrinus caelatus levis Grabau and Shimer

BRYOZOA

Lichenalia concentrica Hall

BRACHIOPODA

Schizotreta tenuilamellata (Hall)
Stropheodonta profunda (Hall)
Strophonella striata (Hall)
Strophonella patenta (Hall)
Leptaena rhomboidalis (Wilckens)
Schuchertella subplana (Conrad)
Schizophoria punctostriata Hall
Platystrophia biforata (Schlotheim)
Bilobites acutilobus (Rengueberg)
Dalmanella elegantula (Dalman)
Rhipidomella hybrida (Sowerby)
Clorinda ventricosa (Hall)
Rhynchotreta cuneata americana (Hall)
Camarotoechia neglecta (Hall)
Camarotoechia? acinus (Hall)
Camarotoechia indianensis (Hall)
Atrypa reticularis (Linnaeus)
Atrypa nodostriata Hall
Cyrtia meta (Hall)
Spirifer niagarensis (Conrad)
Spirifer radiatus (Sowerby)
Spirifer crispus (Hisinger)
Spirifer eudora (Hall)
Homeospira apriniformis Hall
Whitfieldella nitida (Hall)
Whitfieldella nitida oblata (Hall)
Whitfieldella intermedia (Hall)
Whitfieldella cylindrica (Hall)

PELECYPODA

Goniophora speciosa Hall

GASTEROPODA

Coelocaulus bivittatus (Hall)
Diaphorostoma hemisphericum Hall
Diaphorostoma niagarense (Hall)

CONULARIA

Conularia niagarensis Hall

CEPHALOPODA

Orthoceras brucensis Williams
Dawsonoceras annulatum (Sowerby)
Kionoceras cancellatum (Hall)

TRILOBITA

Bumastus ioxus (Hall)
Goldius niagarensis (Hall)
Calymene niagarensis Hall
Sphaerexochus romingeri Hall
Dalmanites limulurus (Green)

Correlation. The Lockport of Ontario is a northwestward extension of the Lockport of New York State. A study of the literature dealing with the upper Niagaran sediments in what might be called the Great Lakes area, that is, in New York, Michigan, Wisconsin, Illinois, Indiana, and Ohio, forces the conclusion that in this region there is apparently no break, either stratigraphic or faunal, from the base of the Lockport to the top of the Guelph. The entire interval represents an unbroken sequence. This same condition prevails in the present map-area, as has already been suggested in the discussion of the Lockport formation in well cuttings. For this reason the discussion of the correlation of the Lockport in Ontario and the Great Lakes region will be deferred until after the Guelph formation has been dealt with.

GUELPH FORMATION

Definition. The term Guelph formation first appeared in Logan's[1] "Geology of Canada" as the name adopted for the series of rocks typically developed in the vicinities of Galt and Guelph.

It is noteworthy that although as early as 1843 Alexander Murray[2] made special mention of the bituminous rocks in the rapids above Niagara Falls, he failed to recognize these "less typical" Guelph rocks as distinct from the underlying series (Lockport), and it was not until 1848 while studying the section at Galt that he[3] recognized the existence of a series of strata overlying the escarpment rocks and containing a distinctive assemblage of fossils.

The formation occupies a position between the Lockport dolomite below and the Salina formation above.

Distribution. The Guelph rocks have an areal extent of about 300 square miles and underlie a narrow belt of country averaging about 6 miles wide and paralleling the escarpment from Niagara River to Dundas. With the exception of the strata forming the brink of Niagara Falls, no natural outcrops of undoubted Guelph rocks were seen in this map-area. There are, however, several stone quarries that expose what is here considered to be the contact zone of the Guelph and underlying Lockport strata. These quarries have been discussed in connection with the upper limit of the Lockport formation, so that only their location will be repeated here.

[1] Logan, Sir W.: "Geology of Canada"; Geol. Surv., Canada, Rept. of Prog. from its commencement to 1863, p. 336.
[2] Murray, A.: Geol. Surv., Canada, Rept. of Prog. 1843.
[3] Murray, A.: Geol. Surv., Canada, Rept. of Prog. 1848–49.

They are situated at the following places: Smithville, Hannon, Ancaster, Dundas, and about one-half mile west of Greensville. In addition, about 20 feet of Guelph strata is exposed in the Canada Crushed Stone Company's quarry on lot 10, con. XI, West Flamborough tp.

Lithology. As the exposures constitute only the lower few feet of the formation, we are dependent upon well cuttings for information regarding the lithology of the Guelph as a whole. It has been stated elsewhere that an examination of well cuttings failed to establish any satisfactory criteria for the separation of the Guelph and Lockport formations, and, consequently, all the strata between the Rochester below and the Salina above have been logged as a single unit under the term Guelph-Lockport. It has further been stated that although in general the lithologic divisions comprising the various Lockport members as seen on exposure along the Niagara escarpment cannot be distinguished in well samples, there are certain wells in which variation in texture and colour would suggest the presence of these divisions. The following table will exemplify the lithology of both the Guelph and Lockport strata; it shows that throughout the Niagara Peninsula the Guelph-Lockport is not divisible in well samples, and that of the wells examined only a few show lithological and colour variations by which the presence of the Lockport divisions could be identified. In the case of each well cited the particular formation or division suggested by the samples is placed in parenthesis following the lithological description.

County	Township	Depth in feet	Lithology
Wellington.....	Puslinch.....	0 to 58	Surface sands, clays, etc.
		58– 93	Light grey, finely granular dolomite (Guelph).
		93–153	Light grey, finely crystalline dolomite (Guelph).
		153–173	Brown, crystalline dolomite (Guelph).
		173–208	Dark brownish grey dolomite with dark, bituminous, shaly partings (Lockport, Eramosa).
		208–288	Light grey, dense dolomite (Lockport).
		288–368	Light grey and bluish grey, finely granular dolomite with small amount of pyrite throughout (Lockport).
Wellington.....	Eramosa.....	0–180	No record.
		180–210	Light bluish grey, coarsely crystalline and porous dolomite (Lockport).
		210–220	Grey, crystalline dolomite; much pyrite (Lockport).
Wentworth.....	Glanford.....	0– 61	Samples unreliable.
		61–280	Buff and brownish, finely granular dolomite (Guelph).

County	Township	Depth in feet	Lithology
Wentworth	Beverly	0–100	Brownish grey, finely granular dolomite (Guelph).
		100–140	Dark brownish grey, finely crystalline dolomite with black, bituminous partings (Lockport, Eramosa).
		140–160	Light grey, crystalline dolomite (Lockport).
		160–195	Light grey to white, coarsely crystalline dolomite (Lockport).
Welland	Humberstone	485–625	Medium and dark brown, finely granular dolomite.
		625–655	Dark grey, finely granular dolomite (not divisible).
Welland	Wainfleet	330–350	No samples.
		350–420	Dark brownish grey, finely granular dolomite.
		420–460	Grey and brownish, finely granular dolomite.
		460–480	Medium to light grey and bluish, crystalline dolomite (not divisible).
Lincoln	Caistor	0– 62	Surface sands, gravels, etc.
		62–222	Dark brownish grey, finely crystalline dolomite. Black bituminous coatings at 107 feet (not divisible).
Haldimand	Canborough	230 to 300	Grey and brownish, finely crystalline dolomite (not divisible).
		300–400	Dark brown, finely crystalline dolomite (not divisible).
		400–430	Brownish grey, finely crystalline dolomite (not divisible).
Haldimand	Dunn	434–554	Dark brownish grey, finely granular dolomite (not divisible).
		554–684	Brown and brownish grey, finely crystalline and granular dolomite (not divisible).
Haldimand	Sherbrooke	446–650	Grey and brownish, finely crystalline dolomite; little dark bituminous shale at base (not divisible).
Haldimand	Sherbrooke	441–646	Brownish grey and brown, finely crystalline dolomite with traces of anhydrite at 506, 541, and 596 feet (not divisible).
Haldimand	Rainham	530–550	Grey and brownish, granular and porous dolomite.
		550–660	Grey and brownish, finely crystalline dolomite (not divisible).

County	Township	Depth in feet	Lithology
Haldimand.....	Rainham.....	462–539	Grey, finely crystalline dolomite; traces anhydrite at 532 feet.
		539–574	Light grey, finely granular, porous dolomite (Guelph).
		514–616	Brown, finely granular dolomite with black, bituminous coatings at base (Lockport, Eramosa?).
		616–651	Grey, finely granular dolomite (Lockport).
		651–679	Dark grey, limy shale; equal amount grey, crystalline dolomite (Lockport).
Brant.....	Onondaga.....	155–170	Grey, finely crystalline dolomite.
		170–190	Grey, finely granular dolomite.
		190–220	Grey and brownish, finely crystalline dolomite. Traces of anhydrite at 205 feet.
		220–250	Light grey, finely granular and porous dolomite.
		250–300	Buff, finely granular dolomite.
		300–395	Brown and brownish grey, finely granular dolomite with anhydrite at 335 and 375 feet.
		395–410	Light grey, coarsely crystalline dolomite (not divisible).

Only in Welland, Haldimand, and Brant counties does the drill penetrate the entire thickness of Guelph-Lockport strata, because only there does the southerly regional dip carry these beds beneath the overlying Salina formation. In Wentworth and Lincoln counties, the wells cited above enter Guelph rocks immediately beneath the glacial drift, so that an unknown thickness of the upper beds is not represented in the samples. Total thicknesses in Welland, Haldimand, and Brant counties range from 170 feet in the former to 255 feet in the latter; these are shown in the following table:

County	Township	Thickness in feet	County	Township	Thickness in feet
Welland.....	Humberstone..	170	Haldimand...	Sherbrooke....	204
Haldimand.....	Canborough....	200	Haldimand...	Rainham.....	217
Haldimand.....	Dunn.....	250	Brant.....	Onondaga.....	255

Upper Limit of Guelph. Nowhere in the map-area is the Guelph-Salina contact exposed; recourse to well cuttings is, therefore, necessary in examining this contact. Unfortunately there are only a few wells for which reliable and complete samples are available, so that our information from this source is meagre. In general, however, the upper limit of the

Guelph is placed between the highest zone of brownish, finely granular dolomite and the lowest occurrence of anhydrite associated with grey to brownish, finely crystalline and dense, shaly dolomite and grey, limy shale. The following table, extracted from samples logged by the writer, will illustrate this contact zone:

County	Township	Depth in feet	Formation	Lithology
Welland	Humberstone	445–485	Salina	Brownish grey, finely crystalline dolomite with minor amount of dark grey, limy shale. Anhydrite at 455 feet.
		485–625	Guelph	Medium and dark brown, finely granular dolomite.
Welland	Wainfleet	200–330	Salina	Medium and brownish grey, finely crystalline to dense dolomite with minor amount of greenish, limy shale and anhydrite throughout.
		330–350	.....	No samples.
		350–420	Guelph	Dark brownish grey, finely granular dolomite.
Haldimand	Canborough	90–230	Salina	Grey, dolomitic shale with minor amount of brownish, finely crystalline dolomite. Anhydrite throughout. Green, dolomitic shale at 180 feet.
		230–300	Guelph	Grey and brownish, finely crystalline dolomite.
Haldimand	Dunn	404–434	Salina	Grey and brownish, finely crystalline dolomite with minor amount of grey and greenish, dolomitic shale. Traces of anhydrite.
		434–554	Guelph	Dark brownish grey, finely granular dolomite.
Haldimand	Sherbrooke	370–446	Salina	Fairly dark grey, dolomitic shale with traces of anhydrite throughout.
		446–650	Guelph	Grey and brownish, finely crystalline dolomite.
Haldimand	Sherbrooke	418–441	Salina	Grey, limy shale and brown, finely crystalline dolomite with traces of anhydrite.
		441–646	Guelph	Brownish grey and brown, finely granular dolomite. Traces of anhydrite at 506, 541, and 596 feet.
Haldimand	Rainham	390–480	Salina	Brownish and grey, finely crystalline dolomite with minor amount of grey and greenish, limy shale. Anhydrite throughout.
		480–530	Guelph	Medium and light grey, finely crystalline dolomite.
Haldimand	Rainham	427–434	Salina	Greenish grey, limy shale.
		434–462	Salina	Brownish grey, finely crystalline dolomite with traces of anhydrite.
		462–539	Guelph	Grey, finely granular dolomite. Traces of anhydrite at 532 feet.
		539–574	Guelph	Light grey, finely granular, porous dolomite.

County	Township	Depth in feet	Thickness in feet	Lithology
Brant.....	Onondaga.....	110–150	Salina.....	Grey and greenish, limy shale with traces of anhydrite.
		150–155	Salina.....	Grey, crystalline dolomite.
		155–190	Guelph.....	Grey, finely granular dolomite.

According to Williams[1], the Salina formation rests unconformably upon the Guelph dolomite in Ontario. This statement appears to be based largely upon the variation in thickness of the Guelph strata throughout the Ontario Peninsula. In the present map-area at least, no evidence was found to support the above interpretation. The contact is seen only in well cuttings, and all the evidence afforded by them points rather to conformable relations between the Guelph and Salina; indeed, in the case of many wells, the contact might be properly referred to as gradational.

Fauna. The Guelph fauna is known chiefly from localities outside the present map-area. The few exposures within the area have yielded only a meagre fauna of a non-diagnostic character such as corals and stromatoporoids, which are known from the underlying Lockport beds. The fauna from the typical beds to which the term Guelph was originally applied has been the object of considerable study, the results of which are embodied in works by Billings[2], Whiteaves[3], Parks[4], Williams[5], and Shaw[6]. Shaw has recently described several new species from the Guelph rocks at Galt, Elora, Tobermory, and Durham, and has published a complete list of the Ontario Guelph fauna as we know it at present. The following is a reproduction of Shaw's list. In the case of a fossil being known to occur also at an horizon lower than the Guelph, the writer has placed the additional horizon after the fossil name. Fauna reported by Shaw as occurring also in beds older than Guelph but not verified by the writer are marked with an asterisk.

ANTHOZOA

Pycnostylus guelphensis Whiteaves. Lockport (Gasport)
Pycnostylus elegans Whiteaves. Lockport (Gasport)
Zaphrentis cf. *racinensis* Whitfield. Rochester
Cyathophyllum articulatum (?) Wahlenberg. Lockport
Diphyphyllum caespitosum (Hall). Lockport
Heliolites interstinctus (Linnaeus). Lockport
Favosites niagarensis (Hall). Lockport, Rochester
Favosites forbesi Edwards and Haime
Favosites occidens Whitfield. Lockport
Favosites cf. *pyriformis* (Hall). Lockport, Rochester
Favosites hisingeri Edwards and Haime. Lockport (Gasport), Rochester
Cladopora sp.
Cystostylus infundibulus (Whitfield)
Halysites catenularia (Linnaeus). Lockport (Gasport)
Halysites agglomeratus (Hall). Lockport
Halysites compactus Rominger. Lockport

[1] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 83.
[2] Billings, E.: Geol. Surv., Canada, Pal. Fossils, vol. 1, 1861–65.
[3] Whiteaves, J. F.: Geol. Surv., Canada, Pal. Fossils, vol. 111, 1884-1906.
[4] Parks, W. A.: Univ. of Toronto Studies, Geol. Ser. No. 4, 1907.
[5] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919.
[6] Shaw, E. W.: Trans. Roy. Can. Inst., vol. XXI, pt. 2, 1937, p. 331.

STROMATOPOROIDEA

Actinostroma vulcana Parks
Clathrodictyon ostiolatum Nicholson. Lockport.
Clathrodictyon striatellum d'Orbigny. Lockport
Clathrodictyon fastigiatum Nicholson
Labechia durhamensis Parks
Labechia minor Parks
Rosenella glenelgensis Parks
Stromatopora galtensis Dawson
Stromatopora antiqua (?) Nicholson and Murie. Lockport
Stromatoporella elora Parks
Stromatoporella elora minuta Parks
Hermatostroma guelphica Parks

CHAETOPODA

Cornulites arcuatus Conrad. Lockport (Eramosa)

CYSTOIDEA

Gomphocystites glans (?) Hall

CRINOIDEA

Columnals

BRYOZOA

Some indeterminate species

BRACHIOPODA

Monomorella ovata Whiteaves
Monomorella ovata lata Whiteaves
Monomorella prisca Billings
Monomorella orbicularis Billings
Monomorella durhamensis Whiteaves
Trimerella grandis Billings?
Trimerella acuminata Billings
Trimerella dalli Davidson and King
Trimerella billingsi Dall
Rhinobolus galtensis (Billings)
Dalmanella elegantula (Dalman). Rochester, Lockport, Clinton
Leptaena rhomboidalis (Wilckens). Lockport, Rochester
Stropheodonta (*Brachyprion*) *profunda* (Hall). Lockport, Clinton
Conchidium occidentale (Hall)? Lockport
Pentamerous oblongus Sowerby. Lockport
Clorinda ventricosa (Hall). Lockport
Rhynchotreta cuneata americana (Hall). Lockport, Rochester
Camarotoechia (?) *indianensis* (Hall). Lockport
Camarotoechia neglecta (Hall). Clinton, Lockport (Eramosa)
**Camarotoechia pisa* (Hall and Whitfield)
Camarotoechia whitei (Hall). Lockport
Camarotoechia roadsi (?) (Foerste)
**Wilsonia saffordi* (Hall)
Atrypa reticularis (Linnaeus). Lockport, Clinton, Rochester
Atrypa nodostriata Hall. Lockport, Rochester, Clinton
Spirifer (*Eospirifer*) *radiatus* (Sowerby). Lockport, Rochester, Clinton
Spirifer (*Delthyris*) *crispus* (Hisinger). Lockport, Rochester
Spirifer (*Eospirifer*) *niagarensis* (Conrad). Lockport, Rochester, Clinton
**Whitfieldella hyale* (Billings)
Whitfieldella intermedia (Hall). Lockport, Clinton
Whitfieldella cylindrica (Hall). Lockport, Clinton, Rochester

PELECYPODA

Pterinea bradti Grabau
Pterinea undata Hall. Rochester
**Pterinea occidentalis* Whiteaves
Mytilarca acutirostra Hall. Lockport
Streptomytilus eduliformis Clarke and Ruedemann
Amphicoelia leidyi Hall. Lockport
**Amphicoelia neglecta* (McChesney)
**Megalomus canadensis* Hall (?)
Megalomus compressus Nicholson and Murie
Modiolopsis sp.
Goniophora crassa Whiteaves
Anodontopsis concinna Whiteaves
**Iliona canadensis* Billings
Iliona (?) *costulata* Whiteaves
Prolucina galtensis Whiteaves

GASTEROPODA

Scenella conica Whiteaves
Archinacella canadensis (Whiteaves)
Tremanotus angustatus (Hall)
Pleurotomaria townsendii Whiteaves
Pleurotomaria cyclostoma Whiteaves
Murchisonia (?) *billingsana* Miller
**Lophospira bispiralis* (Hall)
Lophospira hespelerensis Whiteaves
**Lophospira mylitta* (Billings)
Losphospira guelphica Whiteaves
Lophospira xanthippe (Billings)
**Lophospira conradi* (Hall)
Lophospira depressa Shaw
Lophospira elora Shaw
Loxoplocus solutus (Whiteaves)
**Eotomaria durhamensis* (Whiteaves)
**Eotomaria galtensis* (Billings)
Hormotoma whiteavesi Clarke and Ruedemann
Phanerotrema occidens (Hall). Lockport
**Liospira perlata* (Hall)
Turritoma constricta (Whiteaves)
Turritoma boylei Nicholson
Coelocaulis vitellia (Billings)
**Coelocaulis turritiformis* (Hall)
Coelocaulis macrospira (Hall). Lockport
Coelocaulis longispira (Hall). Lockport
Coelocaulis estella (Billings)
Coelocaulis bivittatus Hall. Lockport
Clathrospira deiopeia (Billings)
Straparollus hippolyta Billings
Straparollus mopsus Hall
Euomphalus inornatus (Whiteaves)
Euomphalus galtensis Whiteaves
Eccyliomphalus circinatus (Whiteaves)
Euomphalopteris elora (Billings)
**Euomphalopteris halei* (Hall)
Euomphalopteris valeria (Billings)
Euomphalopteris velaris Whiteaves
Poleumita viola (Billings)
Poleumita (?) *sulcata* (Hall)
**Poleumita scamnata* Clarke and Ruedemann
Poleumita parvula (Whiteaves)

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Poleumita macrolineata (Whitfield). Lockport
**Poleumita durhamensis* (Whiteaves)
**Poleumita crenulata* (Whiteaves)
Codonochilus striatus Whiteaves
**Trochonema fatuum* (Hall)
Strophostylus elevatus (Hall)
Holopea (?) *occidentalis* Nicholson
Holopea gracia Billings
Holopea guelphensis Billings. Lockport
Holopea harmonia Billings
**Pycnomphalus solarioides* (Hall)
Pycnomphalus daphne (Billings)
Loxonema boydi Hall
Cyrtospira ventricosa (Hall)
Cyrtospira inflata Shaw
Subulites compactus Whiteaves
Diaphorostoma niagarense (Hall). Lockport, Rochester, Clinton

CEPHALOPODA

Ascoceras townsendi Whiteaves
Orthoceras selwyni Billings
Orthoceras brucensis Williams. Lockport
Dawsonoceras annulatum (Sowerby). Lockport
**Discoceras graftonense* (Meek and Worthen)
**Kionoceras darwini* (Billings)
**Protokionoceras crebescens* (Hall)
Protokionoceras trusitum (Clarke and Ruedemann). Lockport
Trochoceras costatum (Hall). Lockport
**Trochoceras desplainense* McChesney
Phragmoceras hector Billings
Phragmoceras nestor canadense Whiteaves
**Phragmoceras parvum* (Hall and Whitfield)
**Maelonoceras articameratum* (Hall)
Cyclostomiceras orodes (Billings)
Amphicyrtoceras orcas (Hall)
Poterioceras sauridens Clarke and Ruedemann

TRILOBITA

Illaenus aboynensis Whiteaves
Arctinurus sp.
Proteus sp.
Calymene niagarensis (Hall). Lockport
**Cheirurus niagarensis* (Hall)

OSTRACODA

Leperditia phaseolus guelphica Jones
Leperditia balthica guelphica Jones. Lockport (Eramosa)
Leperditia sp.

EURYPTERIDA

Eurypterus boylei Whiteaves

This list includes 163 species, of which 77 occur in rocks older than the Guelph. The Guelph fauna is thus seen to be characterized not particularly by a failure of earlier forms but rather by the introduction of many

new species. Gastropods are the most prolific individuals, and of the total number occurring in the Guelph, only one-third are found at lower horizons. It is the general assemblage and association of forms, rather than the occurrence of any particular fossil or fossils that could be called diagnostic of the formation, that characterizes the Guelph strata of Ontario. However, as pointed out by Shaw[1], perhaps the most diagnostic and at the same time reasonably abundantly occurring species are *Megalomus canadensis, Trimerella grandis, Trimerella acuminata, Conchidium occidentale, Whitfieldella hyale,* and *Coelocaulis longispira.*

GUELPH-LOCKPORT STRATA

It seems advisable at this time to present a summary of, and conclusions from, the foregoing discussion of the Lockport and Guelph formations. It will be recalled that certain strata have long been referred to as the Lockport formation and that these rocks are followed by sediments long referred to as the Guelph formation. On previous pages of this report each of these formations has been separately described, but in so doing certain evidence has appeared that seems to break down the line of separation and militate in favour of the two formations being a product of continuous sedimentation and representing an unbroken sequence.

All the rocks referable to Lockport time are exposed at one locality or another in the present map-area, but unfortunately only the lower few feet of Guelph strata can be seen. The great bulk of these rocks, and indeed the exposures to which the term Guelph was originally applied, occur some 15 or 20 miles west of the present area; for this reason well cuttings must be relied upon for the lithology of this formation within the area.

The Lockport rocks form the upper bold face of the Niagara escarpment and are readily accessible at many localities between Niagara River and Dundas. As thus exposed, several more or less definite lithological variations are recognizable, and these have been the bases of dividing the Lockport into members (DeCew, Gasport, Chert beds, Eramosa) by previous writers. At only one locality, the town of Dundas, is a complete section of Lockport exposed; elsewhere various thicknesses have been removed by denudation leaving only partial sections exposed.

Examination of Lockport strata in well cuttings shows that only in a few instances can the lithological divisions seen along the escarpment be recognized. In some wells the occurrence of chert suggests the presence of the chert beds, whereas in others brownish, bituminous and argillaceous dolomite suggests the presence of the Eramosa beds. Most of the well samples examined show the Lockport to possess a fairly uniform lithology throughout; they indicate a gradual disappearance of the Lockport lithological members in passing southward across the Niagara Peninsula from the escarpment.

The Lockport-Guelph contact zone can be seen in several stone quarries as well as at Niagara Falls near the top of the Gorge Route railway cut. Wherever the contact horizon has been seen, the actual contact could be

[1] Shaw, E. W.: Trans. Roy. Can. Inst., vol. XXI, pt. 2, 1937, p. 347.

placed anywhere within a transition zone up to 10 feet thick in which brownish, dense dolomite with black, bituminous partings passes upward into much thicker bedded, brownish grey to grey, granular and porous dolomite (Guelph) with little or no bituminous content. There is no indication of disconformity, although the gradual change in lithology would suggest a widespread change in the basin of deposition.

The great bulk of the Guelph formation within this area is known only from well cuttings. In these cuttings the Guelph appears as a lithologically uniform mass of dolomite showing buff, brown, and brownish grey colours. Close examination of samples from wells penetrating both Guelph and Lockport strata failed to yield any satisfactory criteria for the separation of these formations, and the two have, therefore, been logged together under the term Guelph-Lockport.

A critical analysis of the Guelph fauna shows that approximately 47 per cent of the forms occur also in beds older than the Guelph, and that most of the newly introduced forms belong to a single group, the Gastropoda. A study of the literature reveals that in Wisconsin, where correlatives of the Guelph and Lockport are particularly well developed, the appearance of the typical Guelph fauna is not a sudden one. In that state, the Racine and Guelph formations were originally separated on palæontological evidence, but Ehlers[1] has suggested that there is neither stratigraphic nor palæontologic break between the beds of these formations. The writer believes, therefore, that the Guelph fauna is a gradual derivative of the fauna of the earlier Niagaran strata, and that the apparently sudden influx of new forms in the Ontario Guelph is due largely to the breaking down of barriers formed in late Lockport time, perhaps by coralline reefs.

Correlation. Apart from the Great Lakes region there are few deposits in North America that can be correlated with the Guelph-Lockport of Ontario.

Rocks of upper Niagaran age in Manitoba were described by Tyrell[2]. The highest Silurian rocks enclosed specimens of *Pycnostylus guelphensis,* but it was not deemed advisable to separate the horizon as Guelph on the evidence of a fossil "whose range is so little known". At a more recent date, Savage[3] has shown these rocks to belong to a lower horizon.

Hume[4] has described the Palæozoic outlier in the Lake Timiskaming region. At this locality the Lockport formation forms the highest member of the Palæozoic rocks except for one exposure that "may represent the transition beds from the Lockport to the Guelph"[5].

In the Great Slave Lake area Hume[6] reports a Guelph fauna from rocks correlated with the Fitzgerald dolomite. The following species were recorded: *Pycnostylus guelphensis, Pycnostylus elegans, Spirifer* nearest *coralliensis, Phragmoceras* sp., *Poterioceras* sp., and *Rizoceras* sp. Although these forms strongly suggest a Guelph age, they are not diagnostic of that time as both the species of Pycnostylus are now known to occur low in the Lockport (Gasport) and the other genera are not specifically identified.

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[1] Ehlers, G. M.: Michigan Acad. Sci., 21st Rept., 1919, pp. 87-90.
[2] Tyrrell, J. B.: Geol. Surv., Canada, Ann. Rept., vol. 5, pt. E, 1890-91, p. 200.
[3] Savage, T. E.: Jour. Geol., vol. XXVI, 1918, pp. 334-340.
[4] Hume, G. S.: Geol. Surv., Canada, Mem. 145, 1925.
[5] Hume, G. S.: Op. cit., p. 34.
[6] Hume, G. S.: Geol. Surv., Canada, Bull. 44, 1926, pp. 59-64.

Several authors have referred the latest Silurian rocks of the Hudson and James Bay region to Guelph time. According to Savage and Van Tuyl[1], the Attawapiskat coral reef is tentatively correlated with the Eramosa beds of Ontario. Analysis of the Attawapiskat fauna indicates a time within the Racine that is probably equivalent to the Eramosa or upper Lockport of Ontario.

Correlatives of the Ontario Guelph-Lockport occur in different degrees of development in the states bordering the Great Lakes.

In New York State, Clarke and Ruedemann[2] have described two Guelph faunal zones, the Upper and Lower Shelby dolomites separated by about 32 feet of strata containing a normal Lockport fauna. The authors also suggest[3] that the two zones can be detected at Niagara Falls. The writer was unable to verify this occurrence, and, in addition, Shaw[4] states that careful search by him failed to reveal their presence. According to Clarke and Ruedemann, the Lower Shelby encloses a purer Guelph fauna than does the Upper Shelby; this condition would suggest a correlation between the Lower Shelby and part of the Ontario Guelph. Admitting such a relation, the intervening Lockport and Upper Shelby must also be equivalent to part of the Guelph as both lie between the Lower Shelby and the overlying Salina beds. Such a correlation seems justified in view of the fact that at Shelby, N.Y., 60 feet of Lockport underlies the Lower Shelby and about the same thickness of Lockport lies below the Guelph at Niagara Falls. Shaw[5] points out that neither the Upper nor Lower Shelby horizons is characterized by the most typical species of the Ontario Guelph, noting the absence of such forms as *Pycnostylus guelphensis, Pycnostylus elegans, Megalomus canadensis, Conchidium occidentale.* The inference may well be that the facies represented by the Ontario Guelph was not present in New York during Guelph time.

In Indiana, the upper Niagara strata have been reported on by Cumings and Shrock[6]. These authors have published a complete list of the Huntington dolomite fauna, and from their own analysis they conclude that the corals, brachiopods, and trilobites show Lockport affinities, whereas such forms as *Favosites occidens, Pycnostylus elegans, Pycnostylus guelphensis, Conchidium, Monomorella,* and *Dinobolus* are of distinct Guelphitic affinities. Cumings and Shrock further point out the lithologic similarity of the Huntingdon dolomite of Indiana, the Springfield-Cedarville of Ohio, the Racine-Port Byron of Illinois, and the Racine-Guelph of Wisconsin, and state that hand specimens of the Racine from Racine, Wisconsin, of the Huntington from Ridgeville, Indiana, and of the Cedarville from Springfield, Ohio, can scarcely be told apart.

The Cedarville dolomite of Ohio encloses such typical Guelph fossils as *Trimerella grandis, Trimerella acuminata, Megalomus canadensis, Coelocaulis macrospira, Conchidium occidentale,* and *Pycnostylus solarioides,* and is correlatable with the Ontario Guelph.

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[1] Savage, T. E., and Van Tuyl, F. M.: Geol. Soc. Am., vol. 30, 1919, p. 368.
[2] Clarke, J. M., and Ruedemann, R.: Guelph Fauna in the State of New York, N.Y.; State Mus., Mem. 5, 1903.
[3] Clarke, J. M., and Ruedemann, R.: Op. cit., p. 14.
[4] Shaw, E. W.: Trans. Roy. Can. Inst., vol. XXI, pt. 2, 1937, p. 384.
[5] Shaw, E. W.: Op. cit., p. 348.
[6] Cumings, E. R., and Shrock, R. R.: Geology of Silurian Rocks of Northern Indiana; Dept. Conservation, Div. Geol., Indianapolis, Pub. 75, 1928, p. 97.

In Wisconsin the upper Niagaran dolomites were divided into Racine beds below and Guelph beds above, by Chamberlin[1]. Subsequent workers have expressed the opinion that this division is unwarranted, and that neither a stratigraphical nor palæontological break exists from the base of the Racine to the top of the Guelph. Williams[2] makes the Ontario Guelph equivalent to the Racine and the overlying Guelph beds of Wisconsin. According to Shaw,[3] a Racine fauna has recently been recognized in the Gasport (Lockport) of Ontario by Nowlan; it, therefore, becomes more probable that the Racine-Guelph of Wisconsin is the correlative of the combined Lockport-Guelph of Ontario.

SALINA FORMATION

Definition. The term Salina was introduced by Dana[4] in 1863 to replace the "Onondaga Salt group" of Hall[5] and Vanuxem[6] as the name Onondaga was already in use for a limestone series. The Salina originally included four "deposits," which were, in ascending order: red shale; lower gypseous shales; gypseous deposit; and magnesium deposit. The series rested upon the Niagara group and was overlain by the Lower Helderberg group.

In 1900, Clarke and Schuchert[7] proposed the term "Cayugan period or group" to include the Salina beds, Rondout waterlime, and Manlius limestone. In 1908, Grabau[8] proposed the usage "Middle Silurian or Salinan," which was represented only by non-marine sediments, and introduced the term Monroe for about 900 feet of fossiliferous strata in Michigan and adjoining regions in Ohio and Canada. In 1908, also, Schuchert uses "Cayugan Series" to include the Salina group, embracing all formations between the Guelph-Niagara group and the base of the Devonian. In 1919,, Williams[9] uses Cayugan group to include all the Silurian in Ontario above the top of the Guelph. In the present map-area, the formations included therein are, in ascending order: Salina beds; Bertie waterlime; and Akron dolomite. This classification is here followed, the Salina being limited below by the Guelph dolomite and above by the Bertie waterlime.

Distribution. The Salina formation has an areal extent of about 400 square miles; it underlies a belt of country averaging about 8 miles wide and extending across the map-sheet from Niagara River to its west boundary. It parallels the north shore of Lake Erie, from which it is separated by a narrow belt underlain by younger rocks.

Exposures of Salina are few, and with only one exception show only a few feet of much weathered rock. The beds may be seen at the follow-

[1] Chamberlin, T. C.: Geology of Wisconsin, vol. 2, 1877.
[2] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 75.
[3] Shaw, E. W.: Op. cit., p. 350.
[4] Dana, J. D.: Manual of Geology, First Edition, 1863, p. 246.
[5] Hall, James: Geol. Surv. of N.Y., 3rd Ann. Rept., 1839, p. 290.
[6] Vanuxem, L.: Geol. Surv. of N.Y., 3rd Ann. Rept., 1839, p. 249.
[7] Clarke, J. M., and Schuchert, C.: Am. Geologist, vol. XXV, Feb. 1900, p. 118.
[8] Grabau, A. W.: Science, N. S., vol. 27, April 1908, pp. 622-23.
[9] Williams, M.Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 82.

ing localities: in the Canadian National Railways cut at Bridgeburg; on the right bank of Grand River about 1 mile below the village of York; at a cut on the river road ¾ mile west of Caledonia; and at several places along the lower 3 miles of MacKenzie Creek.

Lithology. Exposures are too few and limited to form a basis for lithologic description of the formation. Wherever seen, however, the beds consist of grey and greenish, thinly bedded, compact and hackly weathering shale with interbeds and alternating zones of greenish grey and grey, platy, dense though porous, argillaceous dolomite. The thickest section, seen on Grand River 1 mile below the village of York, shows the following sequence:

	Feet	Inches
Grey weathered, fine, dense though porous, greenish grey, platy, argillaceous dolomite.....	3	6
Greenish grey, compact and hackly weathering, calcareous shale with gypsum.....	3	0
Alternating zones and interbeds of thin-bedded, hard, grey shale and thin, even beds of light grey, dense, argillaceous dolomite.....	19	6

Only by means of well borings can the entire formation be studied. As thus examined, the Salina shows an alternation of distinct grey and brown intervals. The grey consist of dolomitic shale and the brown are finely crystalline dolomite with a small argillaceous content. There is practically no pure shale in the entire succession, in fact, the formation as a whole is dominantly calcareous. A small amount of anhydrite and gypsum ocurs throughout, the large proportion of which is associated with the dolomitic shale zones.

Delimitation and Thickness. The lower limit of the Salina has already been discussed in connection with the Guelph dolomite.

The Salina-Bertie contact is nowhere exposed in the map-area, but elsewhere it is known to be transitional in character. It is difficult to place with consistency the upper limit of the Salina in well cuttings, as the overlying formation is similar, at least in its lower part, with the upper Salina. In practically all the wells examined, different thicknesses of grey and brownish, finely crystalline to dense dolomite with thin, shaly zones overlie the highest appearance of anhydrite associated with grey, dolomitic shale and dolomite. The contact is here placed above the highest anhydrite, the overlying strata being referred to the Bertie-Akron beds.

The following table, extracted from samples logged by the writer, will illustrate the nature of the foregoing contact in wells located in the townships specified. The table also shows the lithology and thickness of the Salina, Bertie, and Akron formations. As the last two formations cannot be separated in well samples, they are here logged as a single unit.

County	Township	Depth in feet	Thickness in feet	Lithology
Welland.....	Humberstone...	30–65	35	Light grey and brownish grey, finely granular, dolomitic limestone (Bertie-Akron).
		65–120	55	Medium grey, shaly dolomite.
		120–265	145	Grey and brownish grey, finely granular and shaly dolomite with small amount of anhydrite throughout.
		265–320	55	Dark grey, dolomitic or limy shale with small amount of anhydrite.
		320–445	125	Medium grey and brownish, limy shale with minor amount of brownish crystalline dolomite and a little anhydrite in upper part.
		445–485	40	Brownish grey, finely crystalline dolomite with minor amount of dark grey, limy shale. Anhydrite at 455 feet.
Welland.....	Wainfleet.....	0–200	200	No samples.
		200–330	130	Medium and brownish grey, finely crystalline dolomite with minor amount of greenish, limy shale. Anhydrite throughout.
Haldimand.....	Canborough....	10– 60	50	Surface sand, gravel, etc.
		60– 90	30	Grey, finely crystalline dolomite and dolomitic shale with traces of anhydrite.
		90–230	140	Grey, dolomitic shale with minor amount of brownish, finely crystalline dolomite. Anhydrite throughout. Some green shale at 180 feet.
Haldimand.....	Dunn.....	24– 64	40	Onondaga formation.
		64–219	155	Medium grey, dolomitic shale with frequent thin zones of brownish, finely crystalline dolomite. Anhydrite throughout.
		219–249	30	Brownish grey, finely crystalline dolomite with minor amount of grey, limy shale. Traces of anhydrite.
		249–269	20	Alternation of brownish grey, finely crystalline dolomite and grey, dolomitic shale.
		269–359	90	Grey, dolomitic shale with thin zones of brownish dolomite. Traces of anhydrite.
		359–369	10	Greenish grey shale. Traces of anhydrite
		369–394	25	Brownish grey, finely crystalline dolomite with grey, dolomitic shale and traces of anhydrite.
		394–404	10	Greenish, limy shale. Traces of anhydrite.
		404–434	30	Grey and brownish, finely crystalline dolomite with minor amount of grey and green, limy shale. Traces of anhydrite.
Haldimand.....	Sherbrooke.....	0–28	28	Surface clay, gravel, etc.
		28–33	5	Grey, shaly dolomite.
		33–53	20	Buff, finely crystalline dolomite.
		53–68	15	Dark grey, limy shale with minor amount of buff dolomite.

County	Township	Depth in feet	Thickness	Lithology
		68–143	75	Grey, dolomitic shale with many thin zones of buff dolomite. Anhydrite throughout.
		143–163	20	Brownish grey, finely crystalline dolomite with small amount of grey, limy shale. Traces of anhydrite.
		163–198	35	Grey, dolomitic shale with lesser amount of buff, finely crystalline dolomite. Traces of anhydrite.
		198–253	55	Brownish grey, finely crystalline dolomite. Small amount of anhydrite.
		253–273	20	Grey and green, dolomitic shale with a little buff dolomite. Traces of anhydrite.
		273–298	25	Brownish grey, finely crystalline dolomite with small amount of grey, dolomitic shale. Traces of anhydrite.
		298–323	25	Grey, dolomitic shale with traces of anhydrite.
		323–418	95	Buff, finely crystalline dolomite with traces of anhydrite throughout.
		418–441	23	Grey, limy shale and brown, granular and finely crystalline dolomite with traces of anhydrite.
Haldimand.....	Rainham.....	7–105	98	Onondaga formation.
		105–119	14	Buff, finely crystalline, dolomitic limestone.
		119–133	14	Dark grey, limy shale with equal amount of buff, dolomitic limestone.
		133–140	7	Brownish grey, finely crystalline, dolomitic limestone.
		140–161	21	Dark grey, limy shale with minor amount of brownish, dolomitic limestone.
		161–217	56	Dark grey, limy shale with a little brownish grey, dolomitic limestone near base. Anhydrite throughout Pyrite at 210 feet.
		217–231	14	Brownish grey, finely crystalline, dolomitic limestone with a little grey, limy shale and traces of anhydrite.
		231–273	42	Alternation of dark grey, limy shale and brownish, dolomitic limestone. Little anhydrite.
		273–322	49	Buff, finely crystalline, dolomitic limestone with minor amount of grey, limy shale and traces of anhydrite.
		322–399	77	Greenish grey, limy shale with thin zones of brownish, dolomitic limestone and traces of anhydrite.
		399–462	63	Brownish grey, finely crystalline, dolomitic limestone. Traces of anhydrite.
Brant.....	Onondaga.....	0–110	110	No samples.
		110–150	40	Dark grey and greenish, limy shale with traces of anhydrite.
		150–155	5	Grey, crystalline dolomite.

The Salina formation is lithologically similar throughout its entire distribution in the Niagara Peninsula. Its thickness, however, seems to decrease when traced from east to west across the area; this decrease is shown in the following table, which records the thickness of the formation in the townships mentioned. When interpreting this table, the difficulty encountered in placing the exact lower limit of the formation should be kept in mind.

Township	Thickness in feet	Township	Thickness in feet
Walpole	315	Sherbrooke	373
Rainham	301	Humberstone	420

Correlation. A complete lack of palæontological material forces any correlation of the Salina beds to be a purely lithological one. In the State of New York, "Camillus shale" is the term applied to the beds immediately below the Bertie waterlime and resting upon the rock salt. It has been pointed out by Alling[1], that although in a general stratigraphic sense the term "shale" is satisfactory, the Camillus at its type locality is really not a shale but a fine-grained, massive, ashen grey, magnesian-lime, mud rock. In describing the Salina beds of our area, we have referred to them as an alternating series of grey, dolomitic shale and brownish, finely crystalline dolomite with a small argillaceous content, the entire succession containing small amounts of anhydrite and gypsum. It will be seen that both the New York Camillus and the Salina beds of the Niagara Peninsula represent a lithology that cannot be referred to any of the common and typical rock types listed among sedimentary deposits. They both suggest special, and to a certain degree similar, physical conditions prevailing during the time of their formation. In view of its like stratigraphic position and similar lithology, the Salina of this area and the "Camillus shale" of New York State are here considered equivalents.

In the State of Michigan the Salina beds rest upon the upper Niagaran dolomites and are overlain by the Bass Island series, which is correlated with the Bertie-Akron of the Ontario Peninsula. Cook[2] has described the Salina at the deepest part of the Michigan basin, and states that it is in the main a dolomitic limestone formation, the rock being "grey, buff, or brown in colour and at times argillaceous". Admitting the possibility or even the probability of the Salina of the Niagara Peninsula and the Michigan basin having been formed in separate and unconnected basins, the two deposits are here considered as contemporaneous.

BERTIE-AKRON SERIES

Because nowhere within this map-area has the writer been able to separate the Bertie waterlime from the overlying Akron dolomite and because such a separation cannot be made from well cuttings, the two divisions will be here treated as a single unit, under the designation Bertie-Akron series.

[1] Alling, H. L.: N.Y. State Mus. Bull., 275, 1928, p. 24.
[2] Cook, C. W.: "The Brine and Salt Deposits of Michigan"; Mich. Geol. and Biol. Surv., Pub. 15, 1913, p. 86.

The term "Bertie or Cayuga dolomite" seems first to have been used by Chapman[1] in 1864 to designate the equivalents in Bertie and Cayuga townships, Ontario, of the New York geologists' "Waterlime Group". In these townships, Chapman's Bertie strata consisted of "thin bedded greyish dolomites interstratified toward the base with a few brown shales and with a brecciated bed composed chiefly of dolomite fragments". This succession evidently comprised all the Silurian strata above the "Onondaga Salt Group" (Salina).

In his study of the uppermost Silurian of western New York Chadwick[2] recognizes the following "well characterized" subdivisions:

	Feet
Akron dolomite, subcrystalline, grey to brownish, with *Cyathophyllum hydraulicum*	12 or less
Buffalo cement bed, carrying eurypterids	6
Scajaquada dark shale and blocky waterlimes with at base the Bridgeburg horizon with eurypterids	8
Falkirk dolomite, brownish and bituminous, below massive and often producing waterfalls; carries marine fauna, but eurypterids at base	30
Oatka beds, dark grey and shaly with a blocky waterlime at base carrying eurypterids	20 or less

The upper three members are stated to be discontinuous across western New York as a result of a pre-Onondaga erosion. "It is claimed that the name Bertie should either be retained in the primitive sense, covering the entire series inclusive of the Akron, or else be restricted to the cement bed here called the Buffalo, a name said to be preoccupied."

The term Akron dolomite was used by Grabau[3] for the strata immediately succeeded by the Onondaga limestone at Akron Falls, New York. According to Williams[4], the Akron at its type locality consists of about 5 feet of light grey, somewhat nodular, fine-grained dolomite, which has wavy bedding and weathers into a pitted surface.

Distribution. The Bertie-Akron series has an areal extent of about 60 square miles; it underlies a narrow belt of country from 1 to 2 miles in width, extending across the area in an east-west direction and separated from the north shore of Lake Erie by a narrow belt of Devonian rocks.

Natural outcrops of this series are few, but different thicknesses of the strata are exposed in rock quarries situated at several localities along the Silurian-Devonian contact zone. The rocks may be seen at the following places, enumerated from east to west across the map-area: (1) at an abandoned quarry on lot 8, con. VIII, Bertie tp., about ½ mile south of Ridgemount; (2) at Bertie township quarry 1¼ miles north of Ridgeway; (3) along the ridge road between highway No. 3 and Ridgemount; (4) at Humberstone township quarry on lot 19, con. III; (5) on north side of feeder to Welland Canal about ¼ mile west of Stromness; (6) at the old county quarry at Byng; (7) on south side of Grand River 2½ miles below

[1] Chapman, E. J.: Minerals and Geology of Canada, 1864, p. 190.
[2] Chadwick, G. H.: Cayugan Waterlimes of Western New York; Geol. Soc. Am., vol. 28, 1917, p. 173 (Abstract).
[3] Grabau, A. W.: New Upper Siluric Fauna from Southern Michigan; Geol. Soc. Am., vol. XIX, 1908, p. 544.
[4] Williams, M. Y., Geol. Surv., Canada, Mem. III, 1919, p. 87.

Cayuga on lot 4, Jones Tract, North Cayuga township; (8) at DeCewsville Crushed Stone quarry 4 miles west of Cayuga; (9) at abandoned quarry on lot 49, con. I, Oneida tp., 1¼ miles north of Nelles Corners; and (10) in road cut ½ mile north of Clanbrassil.

Lithology. As seen at the outcrop and in the various quarries, the Bertie-Akron series consists of thin-bedded to platy, brownish grey, fine-grained, argillaceous dolomite at the top, underlain by dark, hard, compact, calcareous and carbonaceous shale with thin interbeds of argillaceous dolomite, the whole grading down into grey, creamy weathered, jointed and thin, evenly bedded, argillaceous dolomite. It is pointed out here that the sections exposed at some of the quarries show somewhat different successions because the upper limit of the Silurian is an erosion surface and the different localities have doubtless suffered varying degrees of denudation. The following detailed sections will illustrate the lithology and succession:

		Feet	Inches
1.	Section at Bertie township quarry 1¼ miles north of Ridgeway.		
	Bertie-Akron series:		
	Brownish grey, fine-grained, argillaceous dolomite in beds from 1 to 6 inches thick, the upper 6 feet nodular and the whole weathered a light cream colour	11	0
	Dark grey to almost black, hard, carbonaceous shale with thin (1- to 2-inch) interbeds of grey, argillaceous dolomite	5	0
	Light grey to buff, dense, argillaceous dolomite in 3-inch beds, the whole vertically jointed and weathered a light buff colour	4	0
2.	Section ½ mile south of Ridgemount on lot 8, con. VIII, Bertie tp.		
	Onondaga formation:		
	Grey limestone, irregularly bedded, with bedding planes almost obscured by nodular and lensy chert. Brachiopods and Bryozoa	4	0
	Dark grey shale 1 to 3 inches thick, showing as dark, wavy line along quarry face and representing erosion surface on top of Bertie-Akron series	—	—
	Bertie-Akron series:		
	Dark grey, fine-grained, argillaceous dolomite in thin, even beds weathered light buff in colour. Upper 10 feet nodular and with wavy bedding planes	13	4
3.	Section at Humberstone county quarry on lot 19, con. III, Humberstone tp.		
	Onondaga limestone:		
	Grey limestone, cherty, in thin, irregular and broken beds. Fragments of grey and yellowish sandstone near base. Profusion of corals	13	0
	Bertie-Akron series:		
	Drab grey to brownish, fine-grained, argillaceous dolomite in even beds 4 to 8 inches thick	11	0
	Dark bluish grey, dense, compact, calcareous? shale	1	0
4.	Section at old county quarry near the village of Byng on lot 18, con. I, Dunn tp.		
	Onondaga limestone:		
	Grey, cherty limestone in irregular beds and badly weathered. At base is broken zone of limestone and grey dolomite fragments with light grey sandstone, which probably represents remnants of Oriskany sandstone	6	0

		Feet	Inches
	Bertie-Akron series:		
	Grey to light buff, fine-grained, argillaceous dolomite in thin, vertically jointed beds	15	6
	Dark grey to almost black, thinly laminated shale	3	0
	Drab and brownish grey, dense, argillaceous dolomite in thin, even, 4- to 10-inch beds. Bedding planes coated with black, brittle, bituminous material. The whole weathered to a bluish grey colour	9	0
5.	Section at DeCewsville Crushed Stone quarry about 4 miles west of Cayuga.		
	Onondaga limestone:		
	Grey, impure limestone with much white weathered, nodular and lensy chert, the whole very unevenly bedded and mixed with light grey, sandy fragments	4	0
	Thin, uneven veneer of dark grey shale.		
	Broken zone of light buff dolomite and sandy rock	2	0
	Bertie-Akron series:		
	Grey to buff, fine-grained, argillaceous dolomite in even, 2- to 4-inch beds, the whole vertically jointed and weathered light cream colour	4	0
	Light grey to buff, dense, fine-grained, argillaceous dolomite in even, 2- to 8-inch beds, the lower part showing dark (bituminous) colour streaks along bedding planes	12	0

In none of the foregoing sections has the writer been able to identify with certainty Chadwick's subdivisions of the Bertie succession. The Scajaquada shale is, however, suggested in sections 1, 3, and 4 by the dark bluish grey to black shale, and the Falkirk dolomite in sections 1 and 4 by brownish grey and buff, argillaceous dolomite immediately underlying the dark shale. We are not positive as to how much, if any, of the upper part of the various sections is referable to the Akron dolomite. The series has been subjected to erosion, which may, at some localities, have removed the entire Akron beds.

In well cuttings the Bertie-Akron series consists of buff and brownish grey, finely crystalline dolomite or dolomitic limestone and dark grey, limy shale, the two forming an alternation in some wells. This lithology is illustrated in the table on pages 76 and 77.

Silurian-Devonian Contact. The Bertie-Akron series constitutes the youngest Silurian strata in the area and is, therefore, overlain by rocks of Devonian age. The Silurian-Devonian contact is unconformable, the Bertie-Akron having been subjected to erosion prior to the Devonian transgression. The contact may be seen at several stone quarries, and is also exposed as a thin, broken zone at various other localities.

At the quarry ½ mile south of Ridgemount (section 2, page 80) the top of the Silurian is marked by a thin, irregular zone of dark shale, above which is the Onondaga cherty limestone. Below the contact, on the quarry face and in joint cracks of the dolomite is green and yellowish sand and on the quarry floor are fragments of light grey sandstone with fragments of Hipparionyx strongly suggestive of the Oriskany sandstone. At the Humberstone county quarry (section 3, page 80) the top of the Bertie-Akron shows an uneven surface upon which rests Onondaga cherty lime-

stone, the lower few feet of which is broken and mixed with fragments of grey and yellowish sandstone representing remnants of the Oriskany. On lot 25, con. II, Humberstone tp., beside the road is a small exposure showing limestone and chert mixed with grey sandstone. On the north bank of the feeder to Welland Canal ¼ mile west of Stromness is a 1-foot ledge of cherty limestone. Below is a fragmental mixture of limestone and sandstone, which in turn rests upon Bertie-Akron dolomite. At the De-Cewsville Crushed Stone quarry (section 5, page 81) the Silurian is overlain by a 2-foot broken zone of buff dolomite and sandy rock, which is followed by cherty Onondaga limestone. At the abandoned Oneida Lime and Sand Company's quarry on lots 48 to 50, con. 1, North Cayuga tp., the Bertie-Akron is unconformably overlain by 8 feet of Oriskany sandstone. Nearby, on lot 46, con. I, North Cayuga tp., is another old quarry showing about 6 feet of Oriskany sandstone. The surface of this sandstone shows fragments of limestone with Onondaga corals as well as inclusions of calcareous and argillaceous material. Onondaga corals, brachiopods, and trilobites occur in the inclusions. This exposure would indicate that erosion of the Orkiskany occurred before the Onondaga transgression. This may account for the absence or very fragmentary state of the Oriskany at most of the localities described.

The above observations suggest the following interpretation of physical conditions prevailing at the end of Silurian and the beginning of Devonian time. The Silurian was terminated by a regression of the Cayugan sea, which initiated a period of erosion. During this period, which is believed to have been of considerable duration, gentle irregularities in the form of elevations and depressions were produced on the surface of the Bertie-Akron series. This surface was then invaded by the late Lower Devonian sea in which was deposited the Oriskany sandstone. As the sea advanced, the depressions were the first to receive the new deposits, which gradually covered even the highest parts of the old land surface. The original maximum thickness of this sandstone is not known, but it is believed to be relatively small. The Oriskany sea then retreated, initiating a second period of erosion during which time the Oriskany formation was removed to such an extent that the higher parts of the old Silurian surface were covered by only a few feet of overlying beds. It would thus appear that the Oriskany sandstone in our area is situated between two stratigraphic breaks. The next event was a transgression of the Middle Devonian sea in which the Ononodaga limestone was deposited. It is probable that during its advance, this sea destroyed or broke up part of the Oriskany sandstone, further reducing its thickness and incorporating the material into the limestone deposit then forming. Such a condition may well account for the fragmentary state and apparent patchy distribution of the Oriskany as seen in this map-area.

Fauna. The fauna of the Bertie-Akron series is best known for the eurypterid content of the Bertie waterlime beds. The fauna of the series in the Erie district, New York, is listed by Alling[1].

[1] Alling, H. L.: N.Y. State Mus., Bull. 275, 1928, p. 40.

ORISKANY FORMATION

Definition. The term Oriskany sandstone was introduced by Vanuxem[1] in 1839 to designate the 20 feet of white quartz sandstone exposed at Oriskany Falls, Oneida county, N.Y. At this locality, the sandstone rested upon the "Water Lime" group (Manlius limestone) and was overlain by the "grey crinoidal" or Onondaga limestone. The formation enters Canada in the vicinity of Fort Erie, and in the present map-area occupies a position between the Bertie-Akron series below and the Onondaga limestone above; it is the initial Devonian deposit.

Distribution. The Oriskany sandstone occurs in the form of an undulating sheet, its thickness varying in accordance with the irregularities of the eroded Silurian surface upon which it rests. This condition makes the distribution appear as a series of detached lenticular bodies, but at every locality where the Onondaga appears to rest directly upon the Bertie-Akron some evidence of Oriskany remnants has been observed. The sandstone, either as a broken zone mixed with the associated strata or as the pure deposit itself, may be seen at the following localities: at the abandoned quarry ½ mile south of Ridgemount; on the road between lots 2 and 3, con. XV, Bertie tp.; at Humberstone quarry on lot 19, con. III; on lot 25, con. II, Humberstone tp., beside the highway; on feeder to Welland Canal ¼ mile west of Stromness; at quarry on lot 18, con. I, Dunn tp.; on river road on south side of Grand River 2½ miles below Cayuga; at Oneida Lime and Sand quarry on lots 48 to 50, con. I, Oneida tp.; at DeCewsville Crushed Stone quarry 1 mile west of DeCewsville; and on lot 46, con. I, Oneida tp.

Lithology. The Oriskany formation is a light grey to white or yellowish, coarse-grained, friable sandstone, usually either massive or in beds 2 feet or more in thickness. The best exposures are seen at stone quarries situated on lots 46 to 50, con. I, Oneida tp., about 1¼ miles south of Clanbrassil. The thickest section is at the abandoned quarry of the Oneida Sand and Lime Company on lot 49, con. I, Oneida tp. On this company's property is an exposure of Onondaga limestone, an excavation showing Bertie-Akron strata, the Oriskany sandstone, and a gypsum prospect shaft. Where the shaft passes through the Oriskany, the sandstone is only 18 inches thick, whereas about 300 feet away the quarry exposes almost 20 feet of the formation. The shaft has long since caved in, but the following is a combined section of the outcrop, the quarry, and the shaft as reported by Stauffer.[2]

	Feet	Inches
15. Soil and drift	0	6
Onondaga limestone:		
14. Very cherty, bluish grey limestone in which fossils are abundant	3	8
13. Cherty, calcareous layers with abundance of coarse sand	0	8

[1] Vanuxem, L.: Geol. Surv. of N.Y., 3rd Ann. Rept., 1839, p. 273.
[2] Stauffer, C. R.: Geol. Surv., Canada, Mem. 34, 1915, p. 61.

	Feet	Inches
Oriskany sandstone:		
12. Coarse-grained, friable, white to yellowish sandstone. At places, especially in the upper part, this sandstone contains occasional concretion-like masses resembling true quartzite. The sand grains vary in size up to ⅛ inch in diameter and are usually well rounded. The lower part contains subangular fragments of the underlying dolomitic limestone. The thickness of this sandstone varies much from place to place, chiefly because of the uneven surface on which it lies, but also because of the unconformity between it and the succeeding formation. These beds are often well filled with characteristic Oriskany fossils	19	6
Cobleskill (?) dolomite (Bertie-Akron):		
11. Weathered buff to yellowish brown, somewhat porous, magnesium limestone. These beds contain a few fossils and vary much in thickness at different places	2	6
Salina beds:		
10. Compact, banded, drab, dolomitic limestone	3	6
9. Compact, banded, brown, dolomitic limestone	10	0
8. Compact, drab dolomite banded with dark blue	5	0
7. Compact, drab dolomite	5	0
6. Hard, drab to brown dolomite splitting into thin layers	8	0
5. Fine-grained, blue shale	24	0
4. Compact, drab, calcareous rock containing thin films of carbonaceous matter	5	0
3. Compact, drab, calcareous rock containing numerous pores or small cavities	1	6
2. Blue, shaly rock containing masses of celestite	3	6
1. An incoherent, blue shale containing crystals of gypsum. Bottom of shaft	8	0

In the above section, the term Bertie-Akron has been inserted by the present writer. In interpreting that part of the section reported by Stauffer under "Salina beds," we would place horizons 7 to 10, inclusive, in the Bertie-Akron series on a purely lithological basis.

Contacts. As in this area both the lower and upper contacts of the Oriskany are inseparably associated with the Silurian-Devonian boundary, these limits have already been described under that heading.

Fauna and Correlation. The Oriskany fauna has been worked out by Stauffer,[1] who lists the following species collected from the Oneida Lime and Sand Company's quarry and adjacent exposures. Those species present also in the Onondaga limestone are marked with an asterisk.

ANTHOZOA

Favosites conicus (?) Hall
Favosites helderbergiae Hall
Zaphrentis roemeri Hall

BRYOZOA

Fenestella biseriata (?) Hall
Hederella magna (?) Hall
Monotrypella sp.
Polypora hexagonalis (?) Hall

[1] Stauffer, C. R.: Geol. Surv., Canada, Mem. 34, 1915, p. 62.

BRACHIOPODA

**Amphigenia elongata* (Vanuxem)
Anoplotheca flabellites (Conrad)
**Atrypa reticularis* (Linnaeus)
Beachia suessana Hall
Brachyprion schuchertanum (?) Clarke
Camarotoechia barrandei Hall
Camarotoechia dryope Billings
Centronella tumida Billings
Chonetes hudsonicus Clarke
Chonostrophia complanata Hall
Crania pulchella Hall and Clarke
Cryptonella fausta (?) Clarke
Cyrtina rostrata Hall
Cyrtina varia Clarke
Eatonia peculiaris (Conrad)
Eatonia sinuata (?) Hall
Hipparionyx proximus Vanuxem
**Leptaena rhomboidalis* (Wilckens)
Leptaena rhomboidalis ventricosa Hall
Leptostrophia oriskania Clarke
Megalanteris ovalis Hall
Meristella lata Hall
Meristella walcotti Hall and Clarke
Metaplasia pyxidata Hall
Nucleospira ventricosa Hall
Orbiculoidea ampla Hall
Oriskania navicella Hall and Clarke
Pholidops arenaria Hall
Pholidops terminalis Hall
Rensselaeria cayuga Hall and Clarke
Rensselaeria ovoidea (Eaton)
Rensselaeria ovulum Hall and Clarke
Rensselaeria sp.
**Reticularia fimbriata* (Conrad)
Rhipidomella musculosa Hall
Rhipidomella oblata Hall
Schellwienella deformis Hall
Spirifer arenosus (Conrad)
Spirifer murchisoni Castelnau
Spirifer plicatus (Weller)
Spirifer saffordi Hall
Spirifer tribulis Hall
Stropheodonta callosa (?) Hall
Stropheodonta lincklaeni Hall
Stropheodonta magnifica Hall
Stropheodonta magniventer Hall
Stropheodonta vascularia Hall
**Strophonella ampla* Hall
Uncinulus mutabilis Hall

PELECYPODA

Actinopteria pumillus Clarke
Actinopteria textilis arenaria (Hall)
Conocardium cuneus (Conrad)
Cypricardinia lamellosa Hall
Pterinopecten pumillus Clarke

GASTEROPODA

Cyrtolites expansus Hall
Diaphorostoma desmatum Clarke
Diaphorostoma ventricosum (Conrad)
Platyceras nodosum Conrad
Strophostylus matheri Hall

PTEROPODA

Tentaculites elongatus Hall

OSTRACODA

Beyrichia sp.

TRILOBITA

**Chasmops anchiops* (Green)
**Hausmania phacoptyx* Hall and Clarke
Hausmania pleuroptyx (Green)
Phacops correlator Clarke
Phacops logani Hall
Proetus conradi Hall
Synphoria stemmatus Clarke

VERMES

Autodetus beecheri Clarke

In eastern North America the Devonian faunas in general and those of the Oriskany in particular have received little attention from palæontologists in the last 30 years. It would appear that most of the collecting from the Oriskany of Ontario prior to the work of Stauffer[1] was made

[1] Stauffer, C. R.: Op. cit.

by Mr. John DeCew, a civil engineer; in fact, Hall's collection upon which Schuchert's[1] list of fossils from the Ontario Oriskany was based was made by that gentleman.

The following remarks are based largely on the work of Stauffer. Of the seventy-six species recorded in the foregoing list, seven are present also in the overlying Onondaga limestone. The fauna presents the same characteristic association of forms that is well known in Oriskany deposits to the south and east. Eighty-three per cent of the species are known in New York State and 25 per cent of these are common to the Onondaga of that region.

According to Clarke,[2] the Oriskany formation of New York varies considerably in the character of its sediments. In eastern New York a calcareous facies is highly developed, the formation being dominantly limestone. In central New York, at the type locality, siliceous sediments exclude all others, and tracing the formation westward to Buffalo, it is present as "an undulated sheet a few inches thick composed of angular pieces of the underlying waterlime cemented by dark quartz sand." Clarke[3] has worked out the fauna of the Oriskany of Becraft Mountain in eastern New York, at which locality the deposit is of the calcareous facies. A comparison of this fauna with that of the foregoing Ontario list shows that thirty-six of the Ontario species are present also at Becraft Mountain. The most common forms in the arenaceous Oriskany at the type locality and found also in that facies elsewhere in New York and in Ontario are *Spirifer arenosus, Spirifer murchisoni, Rensselaeria ovoides, Hipparionyx proximus, Chondrostrophia complanata,* and *Meristella lata.* These forms are present also in the calcareous Oriskany of eastern New York. It is Clarke's[4] belief that these fossils "could not have had their habitat on such a deposit and in a sea whose depth favoured such deposition." He, therefore, regards them as having been swept out of their facies and away from the more calcareous deeper water deposits of the time. In other words, these characteristic fossils of the sandstone facies in both New York and Ontario properly belong to the calcareous facies and the normal fauna of the Oriskany formation.

The Oriskany fauna is represented in association with both earlier (Helderbergian) and later (Onondaga) forms in the Gaspe Peninsula. The Devonian there was first described by Logan who recognized two divisions, the Gaspe Limestone overlain by the Gaspe Sandstone. He believed the former to be Upper Silurian in age and divided it into eight divisions. These were later shown to be Devonian by Clarke, who grouped them into three formations, the uppermost one of which included Logan's divisions 7 and 8, and was called Grand Grève limestone. This formation constitutes the youngest Lower Devonian strata in the region. According

[1] Schuchert, C.: Geol. Soc. Am., vol. 11, 1900, p. 324.
[2] Clarke, J. M.: N.Y. State Mus., Mem. 3, 1900, p. 11.
[3] Clarke, J. M.: N.Y. State Mus., Mem. 3, 1900.
[4] Clarke, J. M.: N.Y. State Mus., Mem. 3, 1900, p. 79.

to Clarke,[1] the fauna of the Grand Grève limestone, although including several Helderbergian species, comprises the most typical species of the Oriskany. Thirty-five per cent of the Ontario Oriskany forms are present in the Grand Grève limestone; this formation, therefore, is here thought to represent the same time as the Ontario Oriskany.

ONONDAGA FORMATION

Definition. The term Onondaga limestone was first used by Hall[2] to designate the grey or greyish blue, compact, crystalline limestone succeeding the Oriskany sandstone in Onondaga county, New York. As originally used, Onondaga was succeeded by the Seneca limestone, which, Hall says "in some instances alternates with it."[3] In 1842 Vanuxem[4] used Eaton's term Corniferous limestone to include the Seneca limestone and to designate the strata lying between the Onondaga below and the Marcellus shale above. In his 1863 report, Logan[5] recognizes that in "Western Canada" many of the Corniferous fossils pass up from the Oriskany; he holds that the intermediate Onondaga can no longer be recognized as a distinct formation, and so unites the two under the name of Corniferous formation. As thus defined, the Corniferous rested upon the Oriskany and was overlain by the Marcellus shale. In 1911 Stauffer[6] dropped the use of the term Corniferous in Ontario in favour of Onondaga, on the grounds that Corniferous was applied in New York to deposits that later proved to be a part of the same formation that had previously been called Onondaga limestone. Stauffer's Onondaga rests upon the Oriskany and is overlain by the Marcellus shale. In the present map-area the Onondaga constitutes the youngest bedrock formation, only the lower part of which is present.

Distribution. The Onondaga formation has an areal extent of about 250 square miles; it underlies a strip of country bordering the north shore of Lake Erie and varying from 1 to 12 miles in width. Natural outcrops are few and show only a few feet of strata at the maximum. They occur at widely separated localities and as small isolated patches on various creeks, particularly on Dry Creek, Stoney Creek, and Hemlock Creek, at the southwest corner of the area. In addition, low, flat exposures may be seen at several places along the shore of Lake Erie, the most extensive of these being situated as follows: between Peacock and Hoover Points; between Miller Point and the South Cayuga-Dunn township line; between Grant Point and Port Maitland; at Point Albino; and immediately south of Fort Erie. The thickest sections, however, are exposed at several stone quarries, although most of these exhibit practically the same horizon.

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[1] Clarke, J. M.: N.Y. State Mus., Mem. 9, 1908, p. 250.
[2] Hall, James: Geol. Surv., New York, 3rd Ann. Rept., 1839, p. 309.
[3] Hall, James: Op. cit., p. 310.
[4] Vanuxem, L.: Geol. of New York, vol. 3, 1842, p. 139.
[5] Logan, W. E.: Geology of Canada, 1863, p. 362.
Stauffer, C. R.: Geol. Surv., Canada, Ann. Rept., 1911, p. 271.

Lithology. As seen at the outcrop, the Onondaga strata consist of grey to bluish, finely crystalline to dense limestone in beds from 6 to 18 inches thick, the bedding planes made irregular by development of grey and bluish chert in thin, fairly continuous, lensy beds and nodular masses. Passing upward through the formation are horizons where the limestone is dark brownish and dark grey to almost black with very dark bluish black chert. Distinct lithological divisions, however, cannot be recognized. Although chert occurs throughout the exposed thickness of the formation it appears to be present in greater quantity in the lower part.

Only at stone quarries can sections of more than a few feet be seen. Most of these quarries are at present abandoned and contain various depths of water, which renders inaccessible a part of the section. One of the thickest sections is at the operating quarry of the Windmill Point Crushed Stone Company on lot 4, con. XI, Wainfleet tp., where a 25½-foot face may be seen. The rock there consists of dark bluish grey, hard, dense limestone in 8-inch to 2-foot beds separated by dark grey to almost black chert in thin, lensy beds and nodular masses.

An excellent section was exposed at the Empire Limestone Company's quarry at Shisler Point; this quarry contained about 30 feet of water when visited by the writer, but Stauffer[1] was able to examine the entire face and records the following section.

	Feet	Inches
5. Wind-blown sand	6	0
Onondaga limestone:		
4. Compact, bluish drab limestone filled with grey chert and containing very few fossils	3	6
3. Somewhat crystalline, dark blue limestone containing much black chert and quite fossiliferous	8	4
2. Massive, semicrystalline, grey limestone containing much grey to bluish chert, which usually runs in streaks. Corals and crinoid segments are rather abundant in these layers	18	6
1. Massive, semicrystalline, grey limestone showing partings of a greenish shale. Large compound corals are often abundant and the cavities of these are in some cases filled with petroleum. These beds extended to the lowest part of the quarry in 1910	10	0

In the extreme southwest part of the area, in Walpole and part of Rainham townships, are several exposures that show a lithology differing somewhat from that of the typical Onondaga. According to Stauffer[2], these outcrops are both lithologically and faunally similar to the Delaware limestone of Ohio and he, therefore, designates them by the same name. The following sections will illustrate lithology of the rocks in question.

	Feet	Inches
Section on shore of Lake Erie ¾ mile west of mouth of Stoney Creek		
2. Hard, dense, compact, brownish limestone with chert in irregular bands along the bedding planes. Emits a petroliferous odour when struck	2	0
1. Dark, brownish black, brittle, limy shale, which weathers into thin laminæ	2	0

[1] Stauffer, C. R.: Geol. Surv., Canada, Mem. 34, 1915, p. 25.
[2] Stauffer, C. R.: Geol. Surv., Canada, Mem. 34, 1915, p. 8.

	Feet	Inches
Section ¾ mile north of Cheapside on Dry Creek and in quarry		
3. Dense, compact, dark brownish limestone weathered blue and disposed in 8- to 10-inch beds with chert as 1- to 2-inch irregular and lensy layers along bedding planes. Much disseminated pyrite at the base. *Favosites* sp. and brachiopods	9	4
2. Dark brownish black, limy shale, which weathers into thin laminæ. *Tentaculites gracillistriatus* common	3	6
Covered interval	1	3
1. Brownish grey, crystalline limestone with profusion of *Favosites* sp. and simple corals	2	0
Section in quarry on south half of lot 2, con. II, Rainham tp.		
2. Bluish weathered, hard, brittle, dense, brownish limestone in beds from 4 inches to 1 foot thick with dark chert both as thin bands and small lensy masses. Emits petroliferous odour when struck	12	0
1. Bluish weathered, hard, compact, dark brownish, limy shale, which weathers into thin laminæ	3	0

Each of the foregoing sections contains an horizon of dark brownish to black, limy shale, which weathers into thin laminæ. At one locality, *Tentaculites gracillistriatus* was collected from this shale by the writer. Stauffer reports *Styliolina fissurella* as occurring in association with the foregoing species at the same locality. According to that author[1], the presence of these forms renders the Marcellus age of the enclosing strata rather certain, and they probably do not occur below that horizon. He has, therefore, considered the horizon as the basal part of the Delaware, and hence it would mark the top of the Onondaga in our area. It is pointed out at this time, however, that Stauffer reports several species from the limestone overlying the Marcellus fossil horizon that have been intimately associated with the Onondaga and lower horizons, but he states that "good evidence has made it necessary to consider other equally good Onondaga forms as passing above the same boundary line in the case of the Delaware limestone of Ohio where geologists have been as reluctant to accept the evidence found in the rocks, and it seems there can be no better reason for disregarding that here observed."[2]

At the present time we are not in possession of conclusive evidence upon which to designate the rocks described in the foregoing sections by the name Delaware limestone. It is felt that exposures in our area are too limited. In addition, Evans and Stewart,[2] after examination of samples from over two hundred wells distributed throughout the Ontario Peninsula state that for the most part it is not possible to separate the Onondaga from the Delaware of Stauffer on a lithological basis. In view of the above considerations, we have mapped the foregoing sections with the Onondaga limestone.

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[1] Stauffer, C. R.: Geol. Surv., Canada, Mem. 34, 1915, p. 8.
[2] Stauffer, C. R.: Geol. Surv., Canada, Mem. 34, 1915, p. 51.
[3] Personal communication.

We are not in possession of well cuttings showing the character of the Onondaga in the eastern part of the map-area. The following tabulation will, however, illustrate the Onondaga lithology as seen in borings from Dunn and Rainham townships, at the western part of the area.

Township	Depth in feet	Thickness in feet	Lithology
Dunn.....	1– 24	24	Mixture of surface drift and grey dolomite.
	24– 39	15	Greenish grey, sandy dolomite and light grey to bluish chert.
	39– 64	25	Grey and greenish, dolomitic shale with sandy shale at base and bluish chert throughout.
Rainham.....	0– 7	7	Surface clay.
	7– 56	49	Brownish grey, finely crystalline limestone with light grey chert.
	56– 70	14	Grey limestone on limy shale; little grey chert.
	70– 84	14	Grey and buff, finely crystalline, dolomitic limestone with minor amount of bluish chert.
	84– 91	7	Bluish chert.
	91–105	14	Cream-coloured, finely crystalline limestone with a little bluish chert.

Contacts. The Onondaga formation rests unconformably upon the Oriskany sandstone or upon the broken Oriskany-Bertie-Akron zone where the Oriskany has been almost completely removed by erosion. Sections showing these contacts are recorded on pages 80 and 81 of this report and will not be repeated here. Further description of the base of the Onondaga appears on pages 81 and 82 under the heading Silurian-Devonian contact. The Onondaga is the youngest bedrock formation in the map-area; its upper limit is, therefore, not represented.

Fauna and Correlation. Although the fauna of the Ontario Onondaga is prolific, corals and brachiopods constitute most of the forms. Of 133 species recorded by Stauffer[1] from the Onondaga of this map-area, 68 per cent belong to the foregoing groups. The following table shows the 133 species, together with their distribution in the states of New York, Michigan, and Ohio, and in Gaspe Peninsula as far as we have been able to determine it. It is not to be assumed, however, that the Onondaga forms of this area that do not appear in any of the other columns of the table are confined to the Onondaga, as we have not attempted an exhaustive search of the literature. On the other hand, the table does indicate a general faunal assemblage and association that is characteristic of Onondaga time.

[1] Stauffer, C. R.: Geol. Surv., Canada, Mem. 34, 1915.

Species	Onondaga of present map-area	Oriskany sandstone of Ontario	Hamilton of Ontario	Onondaga of New York	Grand Grève limestone of Gaspe	Gaspe sandstone of Gaspe	Columbus limestone of Ohio	Dundee limestone of Michigan	Oriskany sandstone of New York
ANTHOZOA									
Cladopora criptodens (Billings)	x		x					x	
Alveolites squamosus Billings	x						x		
Amplexus yandelli Milne-Edwards and Haime	x								
Cladopora labiosa (Billings)	x		x						
Cladopora pulchra Rominger	x						x		
Cystiphyllum vesiculosum Goldfuss	x		x				x	x	
Favosites basalticus Goldfuss	x			x			x		
Favosites canadensis Billings	x		x						
Favosites cervicornis Milne-Edwards and Haime	x								
Favosites emmonsi Rominger	x			x			x	x	
Favosites hemisphericus (Troost)	x			x			x		
Favosites turbinatus Billings	x		x	x				x	
Heliophyllum exiguum Billings	x		x						
Heliophyllum halli Milne-Edwards and Haime	x		x				x		
Synaptophyllum simcoense (Billings)	x								
Syringopora perelegans Billings	x		x				x		
Zaphrentis gigantea Lesueur	x		x	x			x		
Vermipora fasciculata (?) Rominger	x								
Aulopora cornuta Billings	x		x				x		
Aulopora tubaeformis (?) Goldfuss	x		x				x		
Cladopora expatiata Rominger	x								
Cladopora fimbriata Rominger	x								
Cyathophyllum coalitum Rominger	x								
Cyathophyllum zenkeri Billings	x		x				x		
Diphyphyllum strictum Milne-Edwards and Haime	x						x		
Diphyphyllum arundinaceum (Billings)	x								
Syringopora hisingeri Billings	x						x		
Syringopora maclurei Billings	x								
Cystiphyllum sulcatum Billings	x						x		
Michelinia convexa (d'Orbigny)	x						x		
Michelinia favositoides Billings	x								
Phillipsastrea billingsi Calvin	x								
Striatopora cavernosa Rominger	x								
Zaphrentis prolifica Billings	x		x	x			x	x	
Alveolites confertus Nicholson	x								
Alveolites distans Nicholson	x								
Alveolites ramulosus Nicholson	x								
Acervularia rugosa Milne-Edwards and Haime	x								
Romingeria umbellifera (Billings)	x								
Favosites winchelli Rominger	x								
Favosites limitaris Rominger	x		x				x		
Favosites radiciformis Rominger	x								
Favosites epidermatus Rominger	x		x	x			x		
Erydophyllum verneuilianum Milne-Edwards and Haime	x						x		
Chonostegites clappi Milne-Edwards and Haime	x								
Bothrophyllum decorticatum	x								
HYDROZOA									
Syringostroma densa (?) Nicholson	x							x	
Syringostroma nodulata Nicholson	x								
Stromatoporella granulata Nicholson	x		x						
Clathrodictyon cellulosum Nicholson and Murie	x								

Species	Onondaga of present map-area	Oriskany sandstone of Ontario	Hamilton of Ontario	Onondaga of New York	Grand Grève limestone of Gaspe	Gaspe sandstone of Gaspe	Columbus limestone of Ohio	Dundee limestone of Michigan	Oriskany sandstone of New York
BRYOZOA									
Cystodictya gilberti (Meek)	x						x		
Fenestella parallela Hall	x						x		
Fistulipora subcava (Hall)	x								
Monotrypa tenuis (Hall)	x						x		
Polypora mutabilis (Hall)	x								
Polypora celsipora (Hall)	x						x		
Polypora granilinea (Hall)	x								
Isotrypa conjunctiva (Hall)	x								
Reteporidra perundata (Hall)	x								
Unitrypa pernodosa (Hall)	x								
BRACHIOPODA									
Anoplia nucleata Hall	x	x			x				x
Anoplotheca camilla Hall	x								
Atrypa reticularis (Linnaeus)	x	x	x	x			x	x	x
Amphigenia elongata (Vanuxem)	x	x		x			x		
Centronella glansfagea Hall	x			x	x		x		
Chonetes acutiradiatus Hall	x			x			x		
Chonetes hemisphericus Hall	x						x		
Chonetes mucronatus Hall	x		x	x			x	x	
Camarotoechia carolina Hall	x								
Camarotoechia tethys (Billings)	x		x		x		x		
Chonostrophia reversa (Whitfield)	x								
Cyrtina hamiltonensis Hall	x		x	x		x	x	x	
Delthyris raricosta (Conrad)	x				x		x		
Eunella lincklaeni Hall	x		x				x		
Leptaena rhomboidalis (Wilckens)	x	x	x	x	x	x	x	x	x
Meristella clusia (?) Billings	x								
Meristella doris Hall	x								
Metaplasis disparilis (Hall)	x						x		
Nucleospira concinna Hall	x		x				x		
Orbiculoidea sp	x								
Pholidops patina Hall and Clarke	x						x		
Pholidostrophia iowaensis (Owen)	x		x	x			x	x	
Parazyga hirsuta Hall	x		x						
Pentamerella arata (Conrad)	x			x			x		
Rhipidomella vanuxemi Hall	x		x	x			x	x	
Rhipidomella livia (Billings)	x						x		
Reticularia fimbriata (Conrad)	x	x	x	x	x		x		
Schellwienella pandora (Billings)	x								
Spirifer duodenarius Hall	x		x	x			x		
Spirifer nacrus Hall	x						x		
Spirifer divaricatus Hall	x		x	x			x		
Spirifer macrothyris Hall	x			x			x		
Spirifer manni Hall	x		x				x	x	
Stropheodonta demissa (Conrad)	x		x				x		
Stropheodonta inequistriata (Conrad)	x		x				x		
Stropheodonta perplana (Conrad)	x		x	x			x	x	
Stropheodonta callosa Hall	x	x							
Stropheodonta concava Hall	x		x	x			x	x	
Stropheodonta hemispherica Hall	x			x			x	x	
Stropheodonta patersoni Hall	x			x	x		x		
Strophonella ampla Hall	x	x		x	x		x		
Strophalosia truncata Hall	x		x				x	x	
Schizophoria propinqua Hall	x						x		
Meristella nasuta (Conrad)	x			x			x		

Species	Onondaga of present map-area	Oriskany sandstone of Ontario	Hamilton of Ontario	Onondaga of New York	Grand Grève limestone of Gaspe	Gaspe sandstone of Gaspe	Columbus limestone of Ohio	Dundee limestone of Michigan	Oriskany sandstone of New York
PELECYPODA									
Aviculopecten sp.	x	.....	.....	.....	.....	.....	.....	.....	.....
Conocardium cuneus (Conrad)	x	.....	.....	x	.....	x	x	.....	.....
Cypricardinia undenta Conrad	x	.....	x	.....	.....	.....	.....	.....	.....
Goniophora hamiltonensis Hall	x	.....	x	.....	.....	.....	x	.....	.....
Megambonia cardiiformis Hall	x	.....	.....	.....	.....	.....	.....	.....	.....
Modiomorpha concentrica (Conrad)	x	.....	.....	.....	.....	.....	x	.....	.....
Modiomorpha mytiloides Hall	x	.....	.....	.....	.....	.....	.....	.....	.....
Paracyclas chioensis (Meek)	x	.....	.....	.....	.....	.....	x	.....	.....
GASTEROPODA									
Diaphorostoma lineatum (Conrad)	x	.....	x	x	.....	.....	.....	.....	.....
Diaphorostoma turbinatum (Hall)	x	.....	.....	x	.....	.....	.....	.....	.....
Euryzone lucina (Hall)	x	.....	.....	.....	.....	.....	.....	.....	.....
Loxonema pexatum Hall	x	.....	.....	.....	.....	.....	x	.....	.....
Igoceras conicum (Hall)	x	.....	x	.....	.....	.....	.....	.....	.....
Platyceras carinatum Hall	x	.....	x	.....	.....	.....	x	.....	.....
Platyceras dentalium Hall	x	.....	.....	.....	.....	.....	.....	.....	.....
Platyceras concavum Hall	x	.....	.....	.....	.....	.....	.....	.....	.....
Platyceras dumosum Conrad	x	.....	.....	x	.....	.....	x	.....	.....
Platyceras erectum Hall	x	.....	x	.....	.....	.....	x	.....	.....
Platyceras rictum Hall	x	.....	.....	.....	.....	.....	x	.....	.....
Platyceras thetis Hall	x	.....	x	.....	.....	.....	x	.....	.....
Turbinopsis schumardi (de Verneuil)	x	.....	x	.....	.....	.....	.....	.....	.....
PTEROPODA									
Tentaculites scalariformis Hall	x	.....	.....	x	.....	.....	x	.....	.....
TRILOBITA									
Chasmops anchiops (Green)	x	x	.....	.....	.....	.....	x	.....	.....
Coronura diurus (Green)	x	.....	.....	x	.....	.....	x	.....	.....
Hausmania phacoptyx Hall and Clark	x	x	.....	x	x	.....	.....	.....	x
Odontocephalus selenurus (Eaton)	x	.....	.....	x	.....	.....	.....	.....	.....
Phacops cristata Hall	x	.....	.....	.....	.....	.....	x	.....	.....
Phacops rana (Green)	x	.....	x	.....	.....	.....	.....	.....	.....
Proetus rowi (Green)	x	.....	x	.....	.....	.....	x	.....	.....
Total	133	9	44	36	9	2	73	21	4

Analysis of the foregoing table shows that of the 133 species recorded, 9 forms, or 7 per cent of the total, are present also in the Oriskany of the same region, and 4 species or 3 per cent occur in the Oriskany of New York. It would thus appear that the Onondaga limestone as developed in this part of Ontario contains a fauna quite distinct from that of the Oriskany. Approximately 33 per cent of the species pass up into the Hamilton formation in Ontario; this would suggest gradual and transitional conditions of sedimentation between the two formations during which time the incoming Hamilton forms mingled with those persisting from Onondaga time.

About 27 per cent of the Ontario species are present also in the Onondaga limestone of New York. Recalling that 68 per cent of the

total species belong to the corals and brachiopoda, the fact that 15 per cent of the former and 48 per cent of the latter are common to both areas is a significant fact in correlating the deposits.

Omitting long range forms such as *Zaphrentis prolifica, Favosites epidermatus, Atrypa reticularis, Leptaena rhomboidalis, Reticularia fimbriata,* etc., about 60 per cent of the species are known also in the Columbus limestone of Ohio. The common species in this case include 37 per cent of the corals and 75 per cent of the brachiopods.

Comparing the Ontario Onondaga fauna with that of the Dundee limestone of Michigan we find 21 per cent of the species common to both deposits; this includes 11 per cent of the corals and 25 per cent of the brachiopods.

The faunal similarities between the Onondaga of Ontario and the early Devonian deposits of Gaspe, at least as suggested by the foregoing table, render any close correlation impossible on that basis. With the exception of a single species, the Grand Grève limestone contains all the Onondaga forms that are common to both regions. With the exception of *Conocardium cuneus* and *Hausmania phacoptyx* all the common species are brachiopods, 18 per cent of the Ontario forms being present also in the Grand Grève limestone. Clarke[1] recognizes the most typical Oriskany species among the fauna of the Grand Grève limestone, but also states that the interval represented in New York by the deposition of the Schoharie grit and Onondaga limestone and other closely allied faunas "is not defferentiated in Gaspe but there is a positive forecast of this fauna among the Grand Grève fossils."[2] He considers the Onondaga fauna to be one of the undifferentiated elements of the autochthonous Grand Grève fauna.

From the above considerations we would place the Onondaga limestone of the present map-area at about the same time as the deposits of the same name in New York, the Columbus limestone of Ohio, the Dundee limestone of Michigan, and the Grand Grève limestone-Gaspe sandstone of Gaspe Peninsula.

[1] Clarke, J. M.: N.Y. State Mus., Mem. 9, 1908, p. 250.
[2] Clarke, J. M.: Op. cit., p. 251.

CHAPTER IV

STRUCTURAL GEOLOGY

A comprehensive treatment of the geological structure of the area as a whole is fraught with several difficulties. Except at the more southerly part of the Niagara Peninsula, the rock surface is covered with a thick though variable mantle of glacial drift, which, as well as causing a scarceness of outcrops, forms a surface topography that in no way reflects the structure of the underlying bedrock. Omitting for the moment the Niagara escarpment, most of the natural outcrops are small and scattered, and as the strata are locally almost flat lying, these do not lend themselves to reliable observations as to attitude. In like manner, the linear extent of the strata exposed in the various rock quarries, and the relatively great distances between the quarries, render attitude determinations both difficult and of questionable structural value. It seems a peculiar circumstance that practically all the recognizable contacts exposed in quarries are unconformable ones, and are thus of little or no value as horizon markers. Added to this, lateral variation of the sediments at several stratigraphic horizons reduces to a minimum key horizons that might be used for structural determinations. Although the Niagara escarpment shows continuous outcrop for long distances, these are for the most part along the strike, although Niagara River cuts practically across the strike throughout its entire course. Bore-hole records form the best basis for structural observations, and as well as aiding in determination of regional dips are practically the sole source of information upon which local detailed structures can be worked out.

Detailed information regarding the topography of the Precambrian surface upon which the Palæozoic sediments rest is meagre. Only a small number of drill holes reach the Precambrian and these are so widely separated that they indicate only the most general characters of its surface. So far as known, the surface is gently undulating, with a regional southerly slope that averages about 33 feet a mile. This results in a gradual increase in thickness of the Palæozoic sediments from approximately 700 feet at the north to about 3,200 feet near the shore of Lake Erie. The following table of borings that pass completely through the sediments illustrates the foregoing remarks and shows the elevation, referred to sea-level, of the Precambrian surface at the respective localities.

Lot	Concession	Township	County	Surface elevation in feet	Thickness drift in feet	Thickness sediments in feet	Elevation of Precambrian surface in feet (datum: sea-level)
11	III	Vaughan	York	648	199	892	−443
13	III	Vaughan	York	694	292	881	−479
64	I	Whitchurch	York	975	570	722	−317
13	IIIW.	York	York	639	233	1,161	−755
Swansea		York	York	347	107	1,138	−898
15	I N.D.S.	Toronto	Peel	—	4	1,421	—
25	IE.	Chinguacousy	Peel	892	100	1,450	−658
6	I W.C.R.	Caledon	Peel	904	141	1,304	−541
12	III	Nassagaweya	Halton	—	20	2,220	—
30	VII	Nassagaweya	Halton	1,110	40	2,130	−1,060
3	VII	Nassagaweya	Halton	706	63	1,762	−1,119
Milton		Trafalgar	Halton	644	58	1,642	−1,056
7	IV	Puslinch	Wellington	1,038	58	2,302	−1,322
6	IV	Eramosa	Wellington	1,197	—	—	−973
5	III	Peel	Wellington	1,218	35	2,491	−1,308
10	I	Flamborough W.	Wentworth	442	231	1,869	−1,658
30	IV	Beverly	Wentworth	820	0	2,335	−1,515
20	IV	Ancaster	Wentworth	738	95	2,468	−1,825
38	I	Ancaster	Wentworth	561	40	2,120	−1,599
12	VII	Mono	Dufferin	925?	203	1,100	−378
33	B.F.	Bertie	Welland	589	—	—	−2,821
6	XV	Bertie	Welland	595	38	3,217	−2,660
2	III	Willoughby	Welland	582	61	2,969	−2,448
2	IV	Willoughby	Welland	586	18	3,011	−2,443
7	III	Wainfleet	Welland	582	—	—	−2,553

W—West. N.D.S.—North of Dundas Street. E—East. W.C.R.—West of Centre Road.

The general structural features are of a simple type, the Palæozoic rocks having been so little deformed that they appear to be flat lying at the individual outcrop. When observed over the entire map-area, however, the strata exhibit a gentle regional inclination somewhat less in magnitude than that of the underlying Precambrian surface, the general direction, as shown by the areal distribution of the formations, being about southwest in the northern part of the area and almost south in the Niagara Peninsula. In the absence of exposed key horizons that could be levelled over sufficient distances to indicate the structure, and of characteristic continuous layers upon which sufficiently spaced elevations could be obtained, bore-hole records, or a combination of these with outcropping horizons, must be relied upon in obtaining the amount of dip. The following figures have thus been determined: in a well near Dundas the base of the black shale (formerly the Collingwood) forming the lowest part of the Billings formation is about 1,162 feet below the level of Lake Ontario; the same horizon at Bowmanville, situated about 14 miles east of the east boundary of the map-area, is 16 feet above the lake. The distance between these two localities is about 80 miles, which indicates a dip of about 15 feet a mile in a direction south 55 degrees west. As worked out by Dyer[1] and verified by the writer, from observations on the Meaford rocks on Credit River, the dip there is about 20 feet a mile south 25 degrees west. The Meaford-Queenston contact is exposed on a small creek east of Meadowvale on lot 18, con. I W., Toronto tp., at an elevation of 598 feet, and again on Etobicoke Creek, 3 miles to the north at an elevation of 648 feet. These observations show a dip of 17 feet a mile in a southerly direction. At Niagara Falls, Kindle[2] has established a southerly dip between the New York Central Railway bridge and the elevator shaft at the falls of about 28½ feet a mile, and states that the average dip along the northern two-thirds of the gorge is somewhat less. The major structural feature of the Niagara Peninsula may be called a monocline exhibiting a dip of about 28 feet a mile in a southerly direction.

A detailed study and correlation of well samples shows local variations in the magnitude of the dip. These variations, so far as known, are not great, but they appear to be sufficient to play an important part in the accumulation of natural gas in commercial quantities. At only one locality is a reversal in the prevailing southerly dip indicated by surface exposures. At an abandoned quarry on south half of lot 2, con. II, Rainham tp., is exposed a sharp contact between compact, brownish black, laminated shale below and dense, brownish grey limestone above at an elevation of 631 feet. What is thought to be the same contact appears on Dry Creek ¾ mile north of Cheapside at an elevation of 607-8 feet. The two localities are 3 miles apart, thus indicating a dip of about 8 feet a mile north 75 degrees west.

Within the limits of direct observation, evidence of faulting in the Palæozoic sediments is extremely rare. At several localities, however,

[1] Dyer, W. S.: 32nd Ann. Rept. Ont. Dept. of Mines, pt. VII, 1923, p. 26.
[2] Kindle, E. M.: U.S. Geol. Folio 190, 1913, p. 14.

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indication of slight movement may be seen on the exposure. On a small creek 1½ miles northeast of the centre of Oakville, and immediately above highway No. 2, northwest striking Meaford beds, which dip 70 degrees to the southwest, lie adjacent to almost flat-lying rocks of the same formation in the stream bed. The whole outcrop is very small and the fault zone broken so as to practically obliterate the actual fault plane. On the shore of Lake Ontario about one-half mile southwest of the Halton-Peel county line a small outcrop of soft grey shale at the water's edge shows crumpling with almost vertical bedding, but covered so as to obscure the details of movement. On the right side of a small creek and close to the school-house on lot 20, con. III, S.D.S., Trafalgar tp., is an exposure of Queenston red shale that shows a small local fault at which beds striking 240 degrees and dipping northwest 54 degrees come against flat-lying strata of the same formation. According to Harkness,[1] a small fault occurs in the shale on the shore of Lake Ontario about one mile west of Oakville. Careful search by the writer failed to locate this break, but it is quite probable that it has been concealed by slumping of overburden or even hidden behind concrete breakwaters built at many places along the shore to reduce wave erosion. At the old county quarry on lots 17 and 18, con. I, Dunn tp., about one-half mile southeast of Byng, the Bertie-Akron dolomites show evidence of movement, although the actual plane of movement is obscured. It seems quite probable that in the relatively thick successions of soft, incompetent shales such as the Dundas, Billings, and Queenston formations much crumpling may be present, but it is just as probable that faults of any appreciable displacement may be few or absent.

It seems worth noting here that faults may play an important rôle in the accumulation of gas and oil in commercial quantities. They may increase the permeability of the reservoir rocks; they may produce local trap structures; and they may bring deep seated oils closer to the surface by vertical migration. In the case of vertical migration, the oil may reach the surface and be lost or it may be segregated in shallower reservoirs where it can be more economically produced.

There are several recognizable time breaks in the Palæozoic succession of the area. First is the unconformity representing the long period of time between the Precambrian and the Ordovician. This whole period may not be one of erosion as a part at least of Cambrian time may have been represented by sediments subsequently eroded before deposition of the existing strata.

The Ordovician-Silurian contact is disconformable, a period of erosion having taken place after deposition of the Queenston formation and before the Whirlpool sandstone was laid down. Available data does not indicate appreciable elevations and depressions on the Queenston surface, but local variation in thickness and the lensy character of the Whirlpool sandstone do indicate more gentle undulations. This break has little direct economic significance; the Queenston shales form neither source nor reservoir rocks for gas and oil and, moreover, as the underlying formations have so far

[1] Harkness, R. B.: 37th Ann. Rept., Ont. Dept. Mines, pt. V, 1938, p. 73.

proved barren of these products in commercial quantities the variable thickness of the Queenston due to denudation is of minor importance in estimating drilling depths.

The Silurian-Devonian contact is also disconformable, the Oriskany sandstone lying upon the eroded surface of the Bertie-Akron beds. The chief importance of this break lies in its effect upon the thickness of the Bertie-Akron at different localities in the area.

The Oriskany-Onondaga contact represents the highest disconformity in the area. It is this break that has resulted in the apparent patchy distribution and the variation in thickness from a few inches to over 20 feet of the Oriskany sandstone. The Oriskany-Onondaga break is of minor economic importance in the present area, but where more deeply buried by overlying sediments it is of major significance in view of the fact that the Oriskany sandstone constitutes an excellent reservoir rock. It is, however, of varying thickness and in places may be lacking.

CHAPTER V

ECONOMIC GEOLOGY

The economic products derived from the bedrock formations of the Toronto-Hamilton area are all of the non-metallic type. Among the more important of these are building stone from the sandstone and limestone formations; road metal from the harder dolomites; cement, lime, fertilizer, and chemicals from the magnesian limestones, dolomites, and high calcium limestones; brick and tile from the shales; rock wool from the upper part of the Rochester formation; gypsum; and natural gas.

STRUCTURAL MATERIALS

LIMESTONE

Guelph-Lockport Strata. Beds at various horizons in these Silurian rocks have been extensively quarried for over 80 years. During this period great quantities of the stone have been used for construction of buildings as well as for bridge piers, canal locks, and other engineering work. At the present time the Queenston Quarries, Limited, operating along the face of the Niagara escarpment immediately south of St. David, is the principal producer of limestone for building purposes, although stone quarried in the vicinity of Beamsville, Thorold, and Hamilton has been used for this purpose in the past.

Dundas Beds. Grey and brownish, impure limestone beds interstratified with the shales of the Dundas formation and well exposed in the brick quarry of the Cooksville Brick and Tile Company at Cooksville are being used for houses and buildings of larger dimensions. The beds range from a few inches to a foot in thickness and upon weathering soon exhibit a rusty coloured surface. A detailed description of the quarries producing limestone for building is given in Mines Branch Publication No. 733, 1933, by M. F. Goudge.

SANDSTONE

Sandstones occurring in the present area have been extensively used in the past as building stones. Most of the older quarries, however, have long since been abandoned, leaving only a few operating at the present time. Parks[1] has published detailed descriptions of most of the workings, and the following statements are based upon his work and the writer's own observations.

[1] Parks, W. A.: Mines Branch, Pub. No. 100, vol. 1, 1912, pp. 139-169.

Whirlpool Sandstone. This basal member of the Medina formation extends along the base of the Niagara escarpment from Niagara River to the north limit of the area. It varies from 25 to 8 feet in thickness, and its irregular bedding and lensy character have proved detrimental to profitable extraction of the stone at many localities where it is easily accessible. The rock has been quarried at several places between Merritton and Hamilton as well as at Milton and Credit Forks, and quarries are at present operating near Inglewood and about 3 miles northwest of Georgetown. Stone obtained from quarries between Merritton and Hamilton was used in the old cotton mill and the town hall at Merritton, the Roman Catholic Church at Niagara Falls, the tower of the Church of England at St. Catharines, and many other smaller buildings. Stone quarried at Milton was used in a church erected at that town in 1895, and the quarries at Credit Forks supplied most of the stone used in the old Parliament Buildings in Toronto.

The Jones' and Corner's quarries, situated at the base of the escarpment about ¾ mile southwest of Inglewood, are supplying Toronto building contractors with stone. Most of this is flagstone, although some is of building dimensions. About 16 feet of the stone has been exposed, the quarries extending almost ½ mile along the escarpment, and both brownish and grey stone is present. Although thicker beds occur, they are commonly about 4 inches thick and split easily into 2-inch flags.

Several small quarries within a radius of 1½ miles, and situated about 3 miles northwest of Georgetown, are producing free stone. These are listed below:

Harry Logan quarry, lot 27, con. IX, Esquesing tp.
A. W. Norton quarry, lot 26, con. IX, Esquesing tp.
Syks quarry, lot 26, con. X, Esquesing tp.
Hugh Logan quarry, lot 28, con. X, Esquesing tp.

The stone is similar in each of the workings; from 5 to 10 feet is exposed consisting of brownish red, mottled, and light grey sandstone disposed in beds from 1 to 4 feet thick. The thinner beds readily split into 2- or 4-inch slabs. The upper 2 feet or so is commonly crossbedded and unsuitable for building purposes. Syks quarry has produced the sandstone used for both the Royal Ontario Museum and the Botany building in Toronto, as well as for the Post Office building in Georgetown.

Oriskany Sandstone. At only one locality in the present area has the Oriskany sandstone been of economic value, and no stone has been produced during the last 25 years. Prior to this time, extensive quarrying was carried on about 1¼ miles south of Clanbrassil, the best stone having been obtained on lots 46 to 48, con. I, Oneida tp. Not more than 20 feet of the sandstone is present here; it is medium grey, weathers lighter where exposed as a vertical wall, and is disposed in beds from a few inches to 4 feet thick.

The stone has been used largely in the neighbouring towns, and chiefly in construction of residences and churches. The most important structures are the Presbyterian Church at Clanbrassil, the Methodist Church at Balmoral, and the Presbyterian and English Churches at Cayuga.

CRUSHED STONE

According to Goudge[1], crushed stone comprises the greatest tonnage of limestone produced in Ontario and also comes first in total value even though the value per ton is one of the lowest of the limestone products. It has many uses, chief of which are for highway construction, concrete aggregate, and railway ballast. Within the present area, there are several principal centres where quarries are regularly operated for production of crushed stone, although some of these produce other limestone products as well. The following tabulation compiled from Goudge and from the writer's field studies shows the principal producing localities, together with the geological horizon.

Operator	Location of quarry	Geological horizon
DeCewsville Crushed Stone, Ltd	DeCewsville	Onondaga Bertie-Akron
Windmill Point Crushed Stone Co., Ltd	Lot 5, con. II, Wainfleet tp.	Onondaga
Queenston Quarries, Ltd	St. David	Guelph-Lockport (Gasport beds)
Standard Quarries, Ltd	Lot 18, con. X, Grantham tp.	Guelph-Lockport
Walker Bros., Ltd	Lots 31 and 32, con. X, Stamford tp.	Guelph-Lockport (Gasport beds)
Canada Crushed Stone Corp., Ltd	Dundas	Guelph-Lockport

In addition to the foregoing, a vast quantity of crushed stone required for local highway work is produced by portable crushing plants from quarries opened at convenient localities. Such temporary quarries are distributed throughout the entire area west of the Niagara escarpment and the interlake region; stone from the Clinton, Guelph-Lockport, Bertie-Akron, and Onondaga formations is thus utilized.

PORTLAND CEMENT

At one time, a natural rock cement similar to a low-grade portland cement was obtained by burning magnesian limestone, which possessed a considerable argillaceous content. In this manner considerable quantities of the DeCew beds, the initial strata of the Guelph-Lockport succession, were utilized, the rock being quarried at DeCew Falls, Thorold, and St. David. According to Williams[2], about 6 feet of Bertie strata at North Buffalo was burnt to a natural rock cement. As similar beds occur north of Ridgeway on lot 1, con. X, Bertie tp., as well as near the village of Byng, raw material may be obtained at these localities should demand arise. However, with modern practice and increased manufacture of high-grade cement the natural rock cement industry has long since disappeared.

None of the Silurian limestones of the present area appears to be suitable for making portland cement; all are probably too high in magnesia

[1] Goudge, M. F.: Bur. of Mines, Dept. of Mines and Resources, No. 781, 1938, p. 33.
[2] Williams, M. Y.: Geol. Surv., Canada, Mem. 111, 1919, p. 100.

for that purpose. However, the calcium limestone of the Onondaga formation is quarried just west of Port Colborne by the Canada Cement Company and utilized for manufacture of that product. Goudge[1] has described the Canada Cement quarries on lots 5 and 6, con. I, Wainfleet tp., and gives the following analyses of the rock there. Onondaga rocks underlie a strip

Sample	SiO_2	Fe_2O_3	Al_2O_3	$Ca_3(PO_4)_2$	$CaCO_3$	$MgCO_3$	Total	S	CaO	MgO	Ratio of CaO to MgO
331.....	4·32	0·43	0·43	0·02	91·70	1·89	98·79	0·07	51·36	0·90	57 : 1
332.....	3·04	0·44	0·68	0·02	94·00	1·30	99·48	0·14	52·65	0·62	85 : 1
332A.....	0·84	0·54	0·26	0·02	92·55	4·66	98·87	0·14	51·84	2·23	23 : 1

of country bordering the shore of Lake Erie and extending entirely across the area. It would seem, therefore, that unless rapid and appreciable changes in the chemical composition of the rocks occur from place to place, raw material suitable for portland cement is present in appreciable quantities.

LIME

During earlier years practically all the calcareous rocks of the Silurian were burnt for lime to some extent. Most of the kilns were operated by farmers, using wood as fuel, to supply both personal and local building requirements. Ruins of these old kilns may still be seen beside rock outcrops in many parts of the area.

At the present time the only commercially producing locality is near Milton where the Gypsum Lime and Alabastine, Canada, Limited, operate a quarry and plant using the Lockport dolomite as the raw material. The quarry is situated on top of the escarpment on lot 3, cons. VI and VII, Nassagaweya tp., immediately south of the Canadian Pacific Railway and about 3 miles west of Milton. The quarry face has a maximum height of about 95 feet and has been worked about 200 feet back from the edge of the cliff. The floor of the quarry is a blue-green, hard, fine-grained, somewhat argillaceous dolomite; this is succeeded by about 6 feet of blue dolomite, to be followed by light grey to almost white and buff-coloured, fine-grained dolomite in beds from 4 to 6 feet thick. The rock is commonly porous and fossiliferous with a profusion of crinoid columns, particularly near the top. Reef structures are not uncommon; they are of impure dolomite containing considerable quantities of pyrite and are unsuitable for lime making.

Production of lime on a commercial scale has been carried on at several other localities in the recent past, but for various reasons operations have been discontinued. For many years prior to 1930 the Toronto Lime Company operated a quarry and plant about 1½ miles west of Limehouse as well as at that village. At Kelso, lime was produced by Christie, Henderson, and Company, but the plant has been idle since 1928; it is now owned by the Gypsum Lime and Alabastine, Canada, Limited. The

[1] Op. cit., p. 281.

Hamilton Lime and Cement Works operated quarries on lot 14, con. VII, Barton tp., but nothing has been produced since 1926. All the foregoing operators utilized the Lockport dolomite for their product. The quarries are described in detail by Goudge[1], who also gives the following analyses of the rock at the various plants.

Sample	SiO_2	Fe_2O_3	Al_2O_3	$Ca_3(PO_4)_2$	$CaCO_3$	$MgCO_3$	Total	S	CaO	MgO	Ratio of CaO to MgO
289.....	0·38	0·48	tr.	0·04	55·11	43·25	99·26	0·04	30·88	20·68	1·49 : 1
289A.....	0·98	1·26	0·60	0·04	54·43	41·58	99·25	0·84	30·50	19·88	1·53 : 1
287.....	0·48	0·51	0·27	0·02	55·55	42·87	99·70	0·01	31·12	20·50	1·52 : 1
288.....	0·96	0·67	0·41	0·04	54·63	41·87	98·58	0·03	30·61	20·02	1·53 : 1
290A.....	0·34	0·66	0·06	0·02	55·13	43·71	99·92	0·02	30·88	20·90	1·48 : 1
305.....	0·54	0·25	0·23	0·02	55·13	43·58	99·75	tr.	30·88	20·84	1·48 : 1

289 Milton.....Quarry of Gypsum, Lime and Alabastine, Canada, Limited; 80 feet of Lockport dolomite.
289A Milton.....Reef structures of impure dolomite at same quarry.
287 Limehouse.....Lockport dolomite in quarry formerly worked by Toronto Lime Company.
288 Limehouse.....Lockport dolomite at old quarry at the village.
290A Kelso.....Lockport dolomite beneath the highly crinoidal beds.
305 Hamilton.....Top 6 feet of Lockport dolomite on property of Hamilton Lime and Cement Works.

The rocks utilized by the foregoing operators form the capping strata of the Niagara escarpment, and as such have a wide distribution in the present area. The succession attains a considerable thickness and should, in consequence, be expected to vary in chemical composition both vertically and laterally; however, it can safely be stated that the supply of raw material for lime making is practically inexhaustible.

In addition to being worked for the foregoing products, the limestone is also quarried for the following uses: rip-rap, rubble, stucco dash, agricultural limestone, and for use in the making of sulphite pulp.

ROCK WOOL

The manufacture of rock wool constitutes the most recently discovered economic use for certain rocks occurring in the present area. As defined by Goudge[2], "rock wool, one of the most effectual and satisfactory insulating materials on the market, is a furnace product made from a self-fluxing siliceous and argillaceous dolomite in which the acidic and basic constituents are present in such proportions that their fluxing action is nearly balanced." In the course of the survey of the limestone resources of Canada conducted by the Mines Branch, a similarity was noted between the chemical composition of wool rock and that of certain dolomites and dolomitic shales in the Niagara Peninsula. Experimental work by the foregoing author showed that the chemical composition of the upper part of the Rochester shale as exposed at Niagara Gorge, St. Davids, and just

[1] Goudge, M. F.: Op. cit.
[2] Goudge, M. F.: Mines Branch, Memorandum Series, No. 50, 1931, p. 1.

east of Thorold fell within that required for wool rock. It was further shown that by mixing the lower part of the Rochester strata, which are too high in silica and alumina, in the proper proportions with the impure DeCew beds immediately overlying the Rochester, and which are too high in calcium and magnesium carbonates, a rock product was obtained that in laboratory tests yielded as favourable results as did the natural wool rock. The following analyses[1] show the composition of the Rochester strata found suitable as wool rock.

——	5	6	8	10
Silica	26·00	27·38	24·46	24·44
Ferric oxide	2·92	2·71	3·07	3·85
Alumina	10·06	11·71	9·21	9·35
Potash	2·32	2·82	3·60	1·64
Soda	0·08	0·30	0·16	0·06
Calcium oxide	18·46	17·46	20·42	21·04
Magnesium oxide	12·15	11·34	10·77	10·70
Volatile matter	27·02	26·30	28·80	27·96
	99·01	100·02	100·49	99·04
Sulphur	0·50	0·24	0·04	0·30

5. Niagara Falls.....12 feet of shale immediately underlying the cement rock (DeCew) in the gorge.
6. Niagara Falls.....10-foot section below the above 12 feet.
8. St. Davids.....6-foot section starting 6 feet below base of cement rock (DeCew) as exposed on small brook just west of building stone quarries.
10. East Thorold.....10 feet of shale immediately below the cement rock (DeCew) as exposed in excavation for weir on new Welland Canal.

In the region between Thorold and Hamilton, the Rochester beds become more siliceous and none of the formations so far analysed has been found suitable as wool rock when tested alone. However, " by mixing Cabot Head shale with the cement rock (DeCew) or with Rochester shaly dolomite in such proportions as required to bring about a nearly balanced ratio between the acidic and basic constituents of the mixture, good results were obtained in every case."[2]

The Rochester shale, DeCew beds, and Cabot Head strata, occurring as they do along the escarpment between Niagara River and Hamilton, have an extensive distribution in the present area. It would seem, therefore, that raw material suitable for rock wool manufacture is plentiful. At the present time the upper part of the Rochester shale taken from a pit in the floor of Walker Brothers stone quarry near Thorold is utilized at the plant of Spun Rock Wools, Limited, Thorold. Rock wool is also being manufactured at Caledonia.

[1] Goudge, M. F.: Op. cit., p. 5.
[2] Op. cit., p. 10.

BRICK AND TILE

Brick and tile are the chief economic products manufactured from the argillaceous rocks of the area. The Dundas and Queenston formations of the Ordovician at present supply all the shales furnishing the raw material for the industry. Keele[1] states that the Silurian Cabot Head beds "would make a good material for roofing tile owing to its smoothness and plasticity and to the fact that it burns to a steel hard surface at low temperature, but the burned colour is not good enough for this purpose." During 1936 the value of building brick and various types of tile produced in Ontario was about $1,500,000.[2]

Dundas Shale. Beds of this formation were probably the first shales to be used for brick making in Ontario. The lower part of the formation (Rosedale and Danforth members), comprising about 63 feet of shale, is quarried in the Don Valley about 2½ miles above Lake Ontario and utilized by both the Don Valley Brick Yards and the Sun Brick Company; the latter company is not operating at the present time. The middle and upper parts of the formation (Humber and Credit members), comprising some 325 feet of rock and exposed at many localities on Humber and Credit Rivers and on most of the intermediate streams, is also utilized and furnishes the raw material used at the Cooksville Brick and Tile Company, Cooksville, the Booth Brick Company, New Toronto, and the Prison Farm quarry, New Toronto. In addition, these shales were also formerly worked at Port Credit and at Islington. The following analyses[3] indicate the composition of the shales:

	Two feet above bottom of Don quarry	Booth Brick Company's quarry
	Per cent	Per cent
Silica	55·3	57·5
Alumina and ferric oxide	23·0	27·0
Calcium oxide	6·4	2·54
Magnesia	Trace	Trace
Loss on ignition (water and carbonic acid)	8·5	7·15
Calculated:		
Carbonic acid	5·03	1·99
Water	3·47	5·16

The wide distribution and considerable thickness of the Dundas formation assures a good supply of raw material from this source.

Queenston Shale. This is the most widely used shale in Ontario. It forms a gentle slope at the base of the Niagara escarpment and is exposed at many localities between Niagara River and the north boundary

[1] Keele, J.: Geol. Surv., Canada, Mem. 142, 1924, p. 25.
[2] This figure includes production from clays.
[3] Ont. Dept. Mines, vol. 32, pt. 7, 1923, p. 96.

of the present area. Its easy accessibility has resulted in its exploitation throughout its entire extent in the region; thus quarries of various sizes may be seen at Terra Cotta, Brampton, Streetsville, Milton, Milton Heights, Inglewood, Bronte, Freeman, Hamilton, Credit Forks, and about 3 miles east of Grimsby. At the present time operations are being carried on at Streetsville, Milton Heights, Brampton, and Hamilton.

According to Keele,[1] the shale is homogeneous in physical character and is easily mined and crushed. It develops good plasticity when mixed with water; this property renders it especially suitable for the manufacture of wire-cut bricks, hollow building blocks, and field drain tile. The following analyses[2] indicate the chemical composition of the shales:

	Silica SiO_2	Alumina Al_2O_3	Iron Fe_2O_3	Lime CaO	Magnesia MgO	Potash K_2O	Soda Na_2O	Loss on ignition
1	55·90	18·46	6·60	3·82	2·65	3·55	0·53	8·74
2	56·90	17·40	6·64	3·84	2·65	3·51	0·53	8·78
3	53·20	17·73	6·91	6·00	3·24	3·40	0·46	9·58
4	47·98	13·10	4·42	12·53	3·25	3·39	0·78	14·50
5	56·52	15·21	5·82	6·86	2·82	3·59	0·56	8·79

1. Beamsville, Lincoln county.
2. Fruitland Brick Company, Wentworth county.
3. Milton Brick Company, Halton county, red-burning shale.
4. Milton Brick Company, Halton county, buff-burning shale.
5. Brampton Brick Company, Peel county.

Cabot Head Shale. Although the shales of the Cabot Head formation have not been utilized in the brick and tile industry, they have distinct economic possibilities. They commonly form a steep slope along the Niagara escarpment and have their best development from about Grimsby to Cataract, within which region good exposures may be seen in the valley of Fortymile Creek, at Stoney Creek above the Canadian Pacific Railway station, at Hamilton on the mountain road (highway 20A), and in the Canadian National Railways cut at Limehouse. Keele[3] states that the shale at Stoney Creek possesses good working and drying qualities and burns to a hard body at low temperature; it would be useful for the manufacture of field drain tile or perhaps hollow building blocks. The following analysis[4] indicates the chemical composition of this shale:

	Per cent
Silica, SiO_2	54·28
Alumina, Al_2O_3	22·12
Iron, Fe_2O_3	5·94
Lime, CaO	1·34
Magnesia, MgO	3·58
Potash, K_2O	5·71
Soda, Na_2O	0·49
Loss on ignition	7·07

[1] Keele, J.: Op. cit., p. 21.
[2] Op. cit., p. 22.
[3] Keele, J.: Op. cit., p. 24.
[4] Op. cit., p. 25.

The Cabot Head shale is not as accessible for quarrying or mining as is the Queenston shale. The Queenston is available in greater quantities and this, together with its wider utility, probably accounts for the fact that the Cabot Head has not as yet been exploited.

GYPSUM

There are only two regions in Ontario where gypsum deposits of any considerable extent are known to occur, namely in the Moose River basin and the Grand River area. At the present time only the Grand River deposits are being worked, and within the area of this report only one mine, that of the Gypsum, Lime, and Alabastine, Canada, Limited, at Caledonia is in operation. It is considerably over 100 years since gypsum was first discovered in Ontario, the first mine being opened about 1822 by William Holmes and situated near the site of the present city of Paris. At first the product was utilized solely for fertilizer or land plaster and the market was both local and limited. In 1938 the value of gypsum produced in Ontario was $244,088, and today gypsum is one of the most important non-metallic minerals mined in the Province. The following table[1] gives a list of the principal gypsum mines that have been producers in the present area.

[1] Ont. Dept. of Mines, vol. 34, pt. 2, 1925, pp. 5-7.

Name of mine	Location	Date first opened	Date shut down	Average yearly tonnage	Number of men employed	Area of property (acres)	Width and colour of gypsum	Remarks
Cooks mine.....	South side Grand River about 1 mile below York.	Before 1838	?	.....	.....	.....	White....	1838: First mill erected at York by Mr. Cook.
Martindale mine.....	Lots 53 and 54, R.R. side of Grand River, Martindale farm, Oneida tp.	1846	1896	1,000	6	.....	White....	1908: Property purchased by Crown Gypsum Company.
Grand River Plaster Co.	Lots 2 and 3, Huff tract, North Cayuga tp.	1870	1897	1,000	.....	.....	.....	1878: Erected a grinding mill. 1880: Purchased by Merritt and Glenny mines. 1886: Erected calcining mill with 25 to 30 tons a day capacity.
Garland mine.....	Lot 13, cons. V, VI, Oneida tp.	1870	1897	1,000	4-6	29	4·5 ft., white.	1881: Property purchased by L. H. Johnson of Caledonia. 1891: Property purchased by N. Garland and operated by him until 1895.
Mount Healy mine...	Cook block.....	1870	1894	1,000	.....	70	4 ft., white.	Opened by W. Donaldson and Co. Part of area purchased by Crown Gypsum Company.
Glenny mine.....	Lot 3, Jones tract, North Cayuga tp.	1874	1892	1,000	.....	106	.....	1880: Property purchased by Grand River Plaster Co.
Excelsior mine.....	Lot 2, Grand River rd., Jones tract, North Cayuga tp.	1875	1895	1,000	3-6	65	4 ft., white.	1879: Property purchased by Gill, Allan, and Brown, Paris. 1890: Property taken over by Anamant Co., Syracuse. 1893: Leased by the Alabastid Co. of Paris.
Teasdale mine.....	Lot 1, Huff tract, North Cayuga tp.	1889	1895	100	2	.....	4 ft., white.	1890: Leased by the Alabastine Co. of Paris.

Name of mine	Location	Date first opened	Date shut down	Average yearly tonnage	Number of men employed	Area of property (acres)	Width and colour of gypsum	Remarks
Caledonia mine.....	Lots 9 and 10, range I, Seneca tp.	1905	Still operating	98, 198 in 1923	150	337	First bed 8 ft., white; second bed 11 ft., grey	1905: Opened by Alabastine Co. of Paris. 1906: Crushing plant built. 1910-11: Plaster mill built. 1921: Alabastine Co. of Paris erected gypsum block plant. 1930: Name of company changed to Gypsum, Lime, and Alabastine, Canada, Ltd.

Examination of cuttings from gas wells shows gypsum to be associated with the Salina formation throughout all that part of the present area underlain by those rocks. However, well samples give little or no reliable information as to either the vertical distribution or the thickness of workable deposits, as 5-foot samples show varying but commonly small quantities of the mineral present throughout practically the total thickness of the formation. It seems worth pointing out that core drilling at those localities where well samples show a considerable percentage of the mineral may indicate workable deposits otherwise overlooked.

Seneca, Oneida, and North Cayuga are the most important townships as regards workable gypsum deposits. The following remarks relative to occurrences in this region are based on the work of Dyer[1], who investigated the Grand River deposits in 1924.

In the vicinity of Cook station, some 3 miles east of York, the following section obtained while drilling a water well was furnished by James Kerr:

	Feet
Glacial drift	0 to 60
Shale and dolomite	60 to 85
Gypsum	85 to 91
Shale and dolomite	91 to 95
Gypsum	95 to 105

Henry Cable reported gypsum from gas wells drilled on the Etna McDonald farm, lot 2, con. II, Seneca tp. No. 1 well showed 9 feet of white gypsum between 42 and 51 feet below the surface, with a covering of 2 feet of rock. Gypsum of a very streaky character was encountered in three other wells at the same level as in well No. 1.

Workable deposits of gypsum occur at Lythmore where operations are (1925) being carried on by the Ontario Gypsum Company. The following beds occur there:

First bed: 3½ feet thick, 75 feet below surface, pure white gypsum.
Second bed: 5 feet thick, 100 feet below surface, top 3 feet thick mixed with shale, lower 2 feet white.
Third bed: 5 feet thick, 140 feet below surface, mixed with shale.
Fourth bed: 3 feet thick, 175 feet below surface, white gypsum, with 1 to 3 inches anhydrite in places about 1 foot from top of bed.

A second shaft, ¼ mile east of the above, shows the third bed at a depth of 90 feet and the fourth bed at 110 feet from the surface.

About one mile below the village of York and on the west side of Grand River, deposits were formerly worked at the Martindale and Cook mines. The gypsum there is of good quality and 4 to 5 feet thick. At the old Carson mine on lot 13, cons. V and VI, Oneida tp., a 4-foot bed of white gypsum lies 50 feet below the surface.

About one mile southwest of Clanbrassil on lot 51, con. I, Oneida tp., 10 feet of gypsum was reported in the log of a gas well at a depth of 53 feet. On lot 24, con. III, J. E. Perkins reports the following section:

	Feet
Glacial drift	0 to 97
Dolomite and shale	97 to 120
Good white gypsum	120 to 123
Dolomite and shale with small quantities of gypsum to the Guelph dolomite	352

[1] Dyer, W. S.: Ont. Dept. Mines, 34th Ann. Rept., pt. 2, 1925, p. 46.

Deposits of gypsum are known to occur immediately north of Cayuga where a bed 4 to 5 feet thick has been reported. At the property of the old Merritt mine on the Huff tract near Gypsum Mines, a mixture of grey and white gypsum is present as a lenticular body thought to be of considerable lateral extent. Across Grand River from this deposit, at the old properties of the Excelsior, Teasdale, and Glenny, a body of white gypsum 4 to 4½ feet thick, covering over 60 acres, has been reported by these companies.

It is the belief of both Dyer[1] and Cole[2] that the workable deposits are lenticular in character and that they occur at different horizons from place to place within the Salina formation. Wherever they have been exploited in the present area, however, they appear to lie within the upper 175 feet of the formation. "At Lythmore, the beds occur intermittently through 100 feet of strata from 150 to 250 feet above the top of the Guelph dolomite. The beds at York are about 125 feet above the Guelph. At Caledonia, the thick bed is about 75 feet above the top of the Guelph. At Cooks station and on Etna McDonald's farm the gypsum is between 50 and 75 feet above the Guelph, while at Gypsum Mines it is near the top of the member (Salina) being 275 feet above the Guelph and 25 to 50 feet below the Bertie"[1].

Cole[2] has published a detailed account of the Caledonia mine. This property was also visited by the writer in 1937. The mine is owned and operated by the Gypsum, Lime, and Alabastine, Canada, Limited, and is situated immediately north of the town of Caledonia, Haldimand county. It was opened in 1905 by the Alabastine Company of Paris and production commenced early in 1906. Three levels have been opened, the second level only being worked at present (1937). The levels are as follows:

——	Depth from surface in feet	Thickness of bed in feet
First level	65	8
Second level	87	11
Third level	107	3

The gypsum rock is of the grey, massive variety with streaks of brownish dolomite, which give either a mottled or bedded appearance. The following analyses[1] indicate the average run of material shipped for use as a retarder in cement manufacture. The underground workings cover about 1,000 acres.

[1] Dyer, W. S.: Op. cit., p. 44.
[2] Cole, G. E.: Ont. Dept. Mines, 34th Ann. Rept., pt. 2, 1925, p. 11.
[1] Dyer, W. S.: Op. cit., p. 45.
[2] Cole, L. H.: Mines Branch, Pub. 714, 1930, p. 35.
[1] Cole, L. H.: Op. cit., p. 37.

——	1	2	3
CaO	36·76	32·40	33·95
SO_3	36·11	39·31	36·96
H_2O	16·27	17·69	16·39
Fe_2O_3 and Al_2O_3	0·20	0·30	0·21
MgO	2·11	3·07	3·03
CO_2	6·43	4·83	7·20
SiO_2	2·12	2·40	2·31
	100·00	100·00	100·05
Gypsum present	77·67	85·52	79·50

The stratigraphy at the property is indicated by the following test hole records, kindly furnished by the Superintendent.

Test hole	Lithology	Thickness	Depth
		Feet	Feet
1	Clay	28·0	28·0
	Loose rock	11·0	39·0
	Mixed lime and gypsum	4·5	43·5
	Gypsum	9·0	52·5
	Lime, some gypsum	6·5	59·0
	Lime, streaks of gypsum	3·5	62·5
	Lime	4·5	67·0
	White gypsum	3·5	70·5
	Hard lime, some hard white gypsum	2·0	72·5
2	Clay	47·0	47·0
	Soft rock	1·0	48·0
	Opening	2·0	50·0
	Lime	2·0	52·0
	Shale, gravel, and clay	2·0	54·0
	Lime	1·0	55·0
	Shale, gravel, and clay	1·0	56·0
	Lime rock	2·0	58·0
	Lime rock, soft streaks	2·0	60·0
	Gypsum and lime	4·0	64·0
	Gypsum rock	8·0	72·0
	Hard lime	2·0	74·0
	White gypsum	3·0	77·0
	Lime rock	0·5	77·5
3	Clay	35·5	35·5
	Lime rock	1·0	36·5
	Soft streaks (clay?)	0·5	37·0
	Lime rock	2·0	39·0
	Soft streaks (clay?)	0·5	39·5
	Lime rock, clay streaks	8·5	48·0
	Gypsum and lime	4·0	52·0
	Grey gypsum	8·0	60·0
	Lime rock	2·0	62·0
	Lime, some gypsum	4·0	66·0
	Lime and gypsum	3·0	69·0
	White gypsum	4·0	73·0
	Lime	2·5	75·5
	Lime rock	10·5	86·0

Test hole	Lithology	Thickness	Depth
		Feet	Feet
4	Clay	29·0	29·0
	Lime rock	2·0	31·0
	Hard lime	6·5	37·5
	Lime, some gypsum	2·5	40·0
	Gypsum	1·5	41·5
	Lime rock	1·0	42·5
	Grey gypsum	8·5	51·0
	Gypsum and lime	3·0	54·0
	Streak of lime and gypsum	10·5	64·5
	Lime rock	2·5	67·0
	Lime and gypsum	5·5	72·5
	Lime	4·5	77·0
	White gypsum	3·5	80·5
	Lime rock	2·0	82·5

NATURAL GAS

INTRODUCTORY STATEMENT

Natural gas is any gas formed in nature. There are many types and varieties, such as marsh gas, petroleum gas, sulphur dioxide, carbon dioxide, and sulphuretted hydrogen. However, as generally understood and as here employed, the term natural gas is the gas obtained from oil or gas fields that is burned in homes and factories as compared with gas manufactured from coal or petroleum.

This natural gas of commerce is a mixture of compounds of carbon and hydrogen, which generally contains other gaseous substances in minor quantities. In the oil and gas fields, natural gas is classified as "dry" or "wet" according to the quantity of gasoline vapours present, and "sweet" or "sour" according to the absence or presence of hydrogen sulphide. The "dry" gas is the usual natural gas of commerce and it commonly occurs in reservoirs separate from oil reservoirs. If present in oil reservoirs it is situated high on the structure so that it carries little or no oil vapours.

The following table[1] shows the chemical analyses of natural gas from the Niagara Peninsula. The absence of hydrogen sulphide shows this gas to be "sweet" gas.

[1] Harkness, R. B.: "Natural Gas Fields of Ontario"; Geol. of Nat. Gas, A.A.P.G., 1935, p. 85.

Field	Formation	CH_4	C_2H_6	C_3H_8	C_4H_{10}	C_5H_{12}	CO_2	O	N	He	H_2S	Specific gravity
Haldimand co., Rainham tp.	Clinton-Grimsby...	89·18	7·42	2·51	0·64	0·29	0·00	0·33	4·29	0·25	0·00	0·672
Haldimand co., Moulton tp.	Clinton-Grimsby-Whirlpool.	64·17	15·00	9·04	2·78	1·36	0·00	0·29	7·15	0·21	0·00	0·695
Welland co., Bertie tp.....	Whirlpool.....	86·07	6·27	1·72	0·59	0·23	0·00	0·00	4·86	0·26	0·00	0·650

Natural gas is one of the most economically important substances found in the Palæozoic rocks of southwestern Ontario, and its production and distribution constitute a major industry in that part of the province. In the Toronto-Hamilton area commercial production is at present confined to the Niagara Peninsula, where Haldimand and Welland counties, together with Gainsborough and Caistor townships, Lincoln county, and Binbrook and Glanford townships, Wentworth county, constitute the producing area. The presence of gas in this area was known as early as 1866, when it was struck in a well drilled for oil in Humberstone township, Haldimand county. However, it was not until a quarter of a century later that serious and large scale exploration was commenced. The first company to bore for natural gas was the Port Colborne Gas, Light, and Fuel Company who started operations in 1885. The first well had a capacity of 7,000 cubic feet a day from a depth of 763 feet. Further drilling followed and in 1889 the Provincial Natural Gas Company drilled their first well on lot 35, con. III, Bertie tp., Welland co. This well came into production in the Whirlpool sandstone at a depth of 846 feet, with an initial open flow capacity of 2,050,000 cubic feet a day. From these beginnings in Haldimand and Welland counties, drilling has gradually spread to Wentworth and Lincoln counties, and production has increased until in 1936 the combined yield from the four counties was 2,021,516,000 cubic feet. If we estimate a price of say 30 cents per thousand cubic feet to the producer, which is approximately one-half the present average cost to the consumer, we arrive at about $606,454.80 for the value of the 1936 production.

PRODUCING HORIZONS

Commercial production comes entirely from rocks of Silurian age, the Medina and Clinton formations holding all the producing reservoir rocks. Three horizons are present within these formations, the Whirlpool (White Medina), Grimsby (Red Medina), and Clinton.

The Whirlpool is the lowest horizon and consists of fine- to medium-grained sandstone. It rests unconformably on the Queenston formation and varies from about 10 to 25 feet in thickness. Examination of well records supplied by drillers shows that Canborough, Moulton, Seneca, Bertie, Crowland, Willoughby, Caistor, and Binbrook townships are the chief areas producing from this horizon.

The Grimsby or Red Medina constitutes a horizon somewhat less definite than the Whirlpool. It is generally difficult to place a boundary between the Grimsby member and the underlying Cabot Head shales. In addition, the lithologic character, being grey and reddish shales and sandstones with frequent irregularly distributed lenticular sandstone masses, renders especially difficult the problem of placing the exact horizon of production. The best we can say is that production from the Grimsby may come from almost any horizon within a total maximum thickness of about 65 feet. The chief townships producing from this horizon seem to be Canborough, North Cayuga, South Cayuga, Rainham, Walpole, and Bertie.

The "Clinton" is the highest producing horizon in the Niagara Peninsula. It should be recalled here that the "Clinton" of drillers includes all the strata between the Rochester shale above and the Grimsby below, that is, the true Clinton plus the underlying Thorold sandstone. It is Stewart's[1] belief that most, if not all, the production reported from the Clinton in the Niagara Peninsula came from the Thorold sandstone. He states that the depth given for production, when correlated with available well samples, corresponds more nearly to the sandstone below the Clinton dolomite than to the upper Clinton as suggested by Harkness. Harkness[2] states that the major gas producing horizon in the Clinton formation is the Irondequoit dolomite (Upper Clinton), although he recognizes that the Thorold sandstone is also gas bearing.[1] Examination of well samples shows a maximum thickness of 14 feet for the Thorold sandstone and about 30 feet for the true Clinton dolomite. The chief area producing from the "Clinton" includes the whole of Haldimand county and Bertie, Crowland, Humberstone, Binbrook, and Glanford townships.

Of the total number of wells for which we have records, 59 per cent got initial production from the "Clinton"; 38 per cent from the Grimsby; and 47 per cent from the Whirlpool. It will be understood that in addition to wells getting production from any one of the three main horizons, some produce from all three and others from two.

REGIONAL STRUCTURE

The major structural feature of the Niagara Peninsula is monoclinal. The Silurian formations, exposed along the Niagara escarpment, dip southward across the peninsula at an average rate of about 28 feet a mile. This southerly dip is also shared by the underlying Ordovician formations. The Palæozoic formations in general have been so little deformed that they appear almost flat lying at the individual outcrop.

The great majority of the wells in the Niagara Peninsula penetrate only a few feet into the Queenston formation, so that little quantitative data exists regarding variations in thickness of the Ordovician strata in this region. Data collected over a much wider area, however, indicate a slight thinning of the Trenton formation northward across the peninsula. The interval between the Trenton and Queenston maintains a roughly constant thickness, but the Queeston thins fairly rapidly in a northwest direction from Niagara River. The Whirlpool sandstone, Grimsby shale and sandstone, Thorold sandstone, Clinton dolomite, and Rochester shale all become thinner northwestward across the peninsula, but the Manitoulin and Cabot Head strata compensate by thickening in the same direction.

SUBSURFACE STRUCTURE

The top of the Clinton dolomite constitutes the only suitable horizon upon which to draw subsurface structure contours. As samples for only a small percentage of the wells are available, drillers logs had to be relied upon in computing the elevations of the Rochester-Clinton contact. As

[1] Stewart, J. S.: personal communication.
[2] Harkness, R. B.: "Geology of Natural Gas"; Am. Assoc. Pet. Geol., 1935, p. 63.
[1] Harkness, R. B.: Op. cit., p. 79.

this is a shale-dolomite contact, it is readily recognized by the drillers and, therefore, reasonable assurance may be placed in their recordings of its depth. The Grimsby horizon was found too indefinite to be used for structural purposes. The Whirlpool sandstone, although it is a distinct lithological unit, appears to thin and thicken when traced laterally, and as it rests upon an unconformable surface (Queenston) it is not suitable as a structural key horizon.

Accompanying maps show structure contours drawn on top of the Clinton dolomite, with a contour interval of 20 feet. The general structure on this horizon is simple and shows a gradual southerly dip averaging about 30 feet a mile. The most conspicuous features are the paucity of both folds and structural closure. Those folds that do occur are so gentle (hardly more than minor rolls) that it seems better to attribute them to initial dip or differential settling rather than to any deformative or diastrophic movement.

There is a suggestion of a low dome in the southwest corner of Rainham township, Haldimand county. This probable structure is elongate in a northwest-southeast direction, with its major axis about 2 miles in extent. It thus underlies the north part of lots 3 to 6, concession I, and the southern part of the same lots in concession II. A structural closure of about 30 feet is indicated. The northerly and southerly dips are both very gentle at about 80 feet a mile; this represents an increase of about 50 feet a mile over the general regional dip in the vicinity.

In the same township and about 3 miles northeast of the foregoing fold, is a structure resembling a small dome flanked on the southwest by a distinct nose. The entire fold has a northeast-southwest trending axis; it underlies lots 9 to 13, concession II, and extends into the southern part of lots 12 and 13, concession III. The dome has a structural closure of between 10 and 15 feet.

Underlying the northern part of lots 39 to 43, con. I N., North Cayuga tp., is a low, dome-like roll having a slightly elongated east-west axis and a structural closure of about 10 feet. About 3 miles farther north and one mile south of Mount Healy, Oneida township, is a low, anticlinal roll. This structure also has an east-west trending axis about one mile in extent. It seems little more than a local bulge on the regional south-dipping monocline, but there is a reversal of dip forming a very small closure.

Near the northeast corner of Canborough township and underlying the central parts of lots 9 and 10, concession II, is a gentle doming of the strata. This fold is slightly elongated in an east-west direction, the major axis appearing slightly longer than the minor one. The dip to the south is about 75 feet a mile, the reversal being somewhat less in amount on the opposite side. The structural closure is about 15 feet.

A minor roll in the form of an anticlinal fold is present in the southern part of Binbrook township, Wentworth county. The structure trends northwest-southeast, extending for about 4½ miles from lot 19 to lot 29, concession VIII. The reversal in dip is very small and the closure very much less than one contour interval. About one mile northwest of this locality, a very small doming is indicated beneath lots 15 and 16, con. VII, Glanford tp. As in the foregoing structure, the reversal in dip from the regional southerly direction is very small and the structural closure very nearly absent.

As already intimated, the fact that the foregoing folds are both extremely gentle and very much localized would render it much more likely that they are the result of differential settling than of any diastrophic movement. It is further suggested that in some instances at least small doming shown by the structure contours may represent the presence of reefs in the Clinton dolomite. Such reef structures are known to occur elsewhere, and can be seen at Niagara River in the upper Clinton and even projecting upward into the overlying Rochester shale.

The structure of the Grimsby and Whirlpool producing horizons cannot be definitely mapped. The "Clinton"-Grimsby contact as reported by the drillers is, stratigraphically, the Thorold-Grimsby contact and is not reliable. The drillers place the contact purely on a colour basis, starting the Red Medina (Grimsby) where the first red colour appears below the Clinton. Moreover, our examination of well samples has shown that except for the red colour we would be unable to separate the Thorold and Grimsby members. A colour criterion alone is not thought sufficient evidence upon which to draw structural conclusions.

Well samples show local thickening of the Whirlpool sandstone from place to place. This variation is probably due to the undulatory surface upon which the strata rest; the structure would not, therefore, be truly portrayed by contouring the surface of the sandstone.

The presence of folds, at least those of a deformative origin, within either the Grimsby or Whirlpool members seems extremely unlikely, and no apparent reason exists why these rocks should be expected to exhibit any more marked structural features than those shown by the overlying Clinton dolomite. Moreover, since diastrophism seems to have played little or no part in forming the local and gentle reversals in dip present in the Clinton, it should not be expected that these reversals would necessarily be reflected downward and be present in the underlying formations. It seems worth recalling here that the combined thickness of the Grimsby, Cabot Head, and Manitoulin members, that is, the stratigraphic interval between the "Clinton" and the Whirlpool does not vary greatly throughout the Niagara Peninsula. The following figures, from well samples, indicate this fact:

Township	Thickness of Grimsby-Manitoulin interval in feet	Township	Thickness of Grimsby-Manitoulin interval in feet
Glanford	85	Canborough	100
Caistor	95	Sherbrooke	92
Humberstone	95	Dunn	110
Wainfleet	95	Rainham	115

PRODUCING FIELDS

It has been stated that commercial production within the Toronto-Hamilton map-area is confined to the Niagara Peninsula, where Haldimand and Welland, together with small parts of Lincoln and Wentworth counties,

constitute the actual producing territory. It is difficult, within this area, to recognize distinct "fields" in the sense of individual producing areas whose limits are known and which are separated by non-productive stretches of country. Drilling has taken place throughout practically the entire area, and although it is true that there are several localities where wells are more or less concentrated and that these are separated by relatively non-drilled areas, yet these latter areas do, for the most part, contain isolated and widely spaced producing wells. The lack of well-defined structures, as indicated on the maps of the area, suggests that structure resulting from deformation is not the dominant controlling factor in accumulation; this condition would account, in part at least, for the difficulty in recognizing distinct fields, in fact, well-defined and limitable fields may not exist and the whole region may be one of potential production. Rather than attempt to describe various fields, we shall briefly outline the areas of concentrated drilling, illustrating, wherever possible, the stratigraphy of each area by giving detailed logs constructed from well samples. It will be understood that at some of the earlier developed localities, as in parts of Welland county, a considerable number of wells exist for which no records are now available, and that the following discussion is based upon wells for which data were obtainable and which we were able to locate in the field.

Haldimand County

Rainham township, and that part of Walpole township within the present map-area, constitute a district where drilling has been concentrated. Wells are fairly evenly distributed over this district and gas is found in every part, regardless of structural conditions. Non-commercial wells occur sporadically over the whole district; in most instances these are surrounded by producers, a condition strongly indicative of discontinuous porosity of the reservoir rock. The Clinton is the main producing horizon, although a considerable quantity of gas comes from the Grimsby. In a few instances, the three horizons (Clinton, Grimsby, Whirlpool) yield gas to the same well. The following logs are illustrative of the detailed stratigraphy of this district.

Log of Doughty No. 1. Completed 1936

Location: lot 2, con. VII, Rainham tp.
Elevation: 686 feet

Formation	Depth in feet	Lithology
	0–370	No samples.
Salina.....	370–390	Greenish, limy shale with minor amount of brown dolomite. Traces of anhydrite.
	390–480	Brownish and grey, finely crystalline dolomite with minor amount of grey and greenish, limy shale. Anhydrite throughout.

Log of Doughty No. 1. Completed 1936—Concluded

Formation	Depth in feet	Lithology
Guelph-Lockport.....	480–530	Medium and light grey, finely crystalline dolomite. Traces of anhydrite.
	530–550	Grey and brown, granular and porous dolomite.
	550–660	Grey and brown, finely crystalline dolomite.
Rochester.....	660–715	Dark grey, limy shale. Pyrite at 700 feet.
Clinton and Thorold..	715–730	Grey, limy shale with equal amount of light grey, crystalline dolomite.
	730–740	Light grey, crystalline dolomite with a little grey, dolomitic shale and light grey sandstone at the base.
Grimsby.....	740–755	Red, sandy shale with green shale and white, medium-grained sandstone.
	755–770	Red and white, medium-grained sandstone with minor amount of red and green shale.
	770–785	Grey, limy shale with small amount of white sandstone.
	785–805	Red and greenish shale with minor amount of white sandstone.
Cabot Head and Manitoulin.	805–840	Greenish grey shale with minor amount of dolomite in lower half.
	840–855	Greenish grey, shaly dolomite with a little green shale.
Whirlpool.....	855–870	Light grey to white, medium-grained sandstone.
Queenston.....	870–874	Red and green shale.

Log of No. 1 Well on Bachelor Farm

Location: lot 11, con. IV, Rainham tp.
Elevation: 650 feet (approx.)

Formation	Depth in feet	Lithology
Surface	0–7	Surface clay.
Onondaga..... ("Big Lime")	7–56	Brownish grey, finely crystalline limestone with light grey chert.
	56–70	Grey limestone and limy shale; little grey chert.
	70–84	Grey and buff, finely crystalline, dolomitic limestone with minor amount of bluish chert.
	84–91	Bluish chert.
	91–105	Cream-coloured, finely crystalline limestone with a little bluish chert.

Log of No. 1 Well on Bachelor Farm—Concluded

Formation	Depth in feet	Lithology
Akron-Bertie.....	105–119	Buff, finely crystalline, dolomitic limestone.
	119–133	Dark grey, limy shale with equal amount buff, finely crystalline, dolomitic limestone.
	133–140	Brownish grey, finely crystalline, dolomitic limestone.
	140–161	Fairly dark grey, limy shale with minor amount of brownish, dolomitic limestone.
Salina.....	161–217	Fairly dark grey, limy shale with little brownish grey, dolomitic limestone near base and anhydrite throughout. Pyrite at 210 feet.
	217–231	Brownish grey, finely crystalline, dolomitic limestone; little grey, limy shale and traces of anhydrite.
	231–273	Alternation of dark grey, limy shale and brownish, dolomitic limestone. Little anhydrite.
	273–322	Buff, finely crystalline, dolomitic limestone with minor amount of grey, limy shale and traces of anhydrite.
	322–399	Greenish grey, limy shale with thin zones of brownish, dolomitic limestone and traces of anhydrite.
	399–427	Brownish grey, finely crystalline, dolomitic limestone. Traces of anhydrite.
	427–434	Greenish grey, limy shale.
	434–462	Brownish grey, finely crystalline, dolomitic limestone with traces of anhydrite.
Guelph-Lockport.....	462–539	Grey, finely crystalline dolomite. Traces of anhydrite at 532 feet.
	539–574	Light grey, finely granular, porous dolomite.
	574–616	Brown, finely granular dolomite with black, bituminous coatings at the base.
	616–651	Grey, finely granular dolomite. Traces of anhydrite at the base.
	651–679	Dark grey, limy shale with equal amount of grey, crystalline dolomite.
Rochester.....	679–749	Dark grey, dolomitic or limy shale.
Clinton dolomite.....	749–763	Light grey, crystalline dolomite with pyrite.
Thorold sandstone....	763–777	Light grey, medium-grained sandstone.
Grimsby.....	777–798	Red sandstone and shale with some green shale.
	798–805	Red and grey sandstone with some red shale.
Cabot Head and Manitoulin beds.	805–819	Red shale with minor amount of red and grey sandstone.
	819–826	Grey sandstone and red and green shale.
	826–875	Greenish and grey shale with minor amount of shaly dolomite at the base.
Whirlpool sandstone ..	875–889	Light grey, medium-grained sandstone.
Queenston shale.....	889–896	Red and green shale.

In North Cayuga township, drilling has covered practically the entire area, but the greatest concentration of wells is in the district northeast of Grand River. On the opposite side of the river there are relatively extensive non-drilled localities such as lots 37 to 50, concession I S., and lots 44 to 52, concession I N. About 25 per cent of the wells for which we have records were initially dry or came in with non-commercial production. Production is mainly from the "Clinton" horizon, although smaller yields are obtained from both the Grimsby and Whirlpool.

Only the eastern two-thirds of Oneida township lies within the present map-area. Within this part of the township, wells are concentrated at several restricted localities, as follows: (1) immediately south of Mount Healy; (2) on lots 53 to 56, concession I; (3) on both sides of the road between concessions 2 and 3 and on lots 19 to 24; and (4) on lots 15 to 18, concession V. Between these localities are more or less extensive non-drilled areas and areas containing few and relatively widely spaced producing and non-producing wells. As in North Cayuga township, approximately 25 per cent of the wells were initially dry or came in with non-commercial production. The "Clinton" is the main producing horizon.

Although drilling has been done in practically every part of Seneca township, wells are widely spaced in some localities. The greatest concentration is in the central and eastern part of the township, which has been fairly well tested. The non-drilled or sparsely drilled localities include: lots 5 to 17, concession II; lots 1 to 15, concession III; lots 4 to 11, concession IV; and all that part of the township from Caledonia westward. About 18 per cent of the wells for which we have records are either dry or non-commercial, and these are scattered throughout the entire drilled area. The Whirlpool and "Clinton" are the main producing horizons, although a number of wells yield from the Grimsby also.

Canborough and Moulton townships may be combined to form an area that has been fairly thoroughly developed. There are, however, several blocks of untested land such as: (1) lots 1 to 9, cross concessions I to IV; (2) lots 1 to 8, concession III, Lake Erie; (3) lots 13 to 25, 1st and 2nd R.F.G.R.; and (4) lots 1 to 5, cons. III and IV, Moulton tp. Gas is found throughout, and less than 20 per cent of the wells were initially dry or non-commercial. The Whirlpool and "Clinton" are the main producers, but the Grimsby is also important, especially in Canborough township. The detailed stratigraphy is illustrated by the following log.

Log of Diener Gas and Manufacturing Company Well No. 2

Location: lot 8, con. III, Canborough tp.
Elevation: 590 feet (approx.)

Formation	Depth in feet	Lithology
Surface	10–60	Surface clay.
Salina.....	60–90	Grey, finely crystalline dolomite and dolomitic shale with traces of anhydrite.
	90–230	Grey, dolomitic shale with minor amount of brownish, finely crystalline dolomite. Anhydrite throughout. Some green, limy shale at 180 feet.
Guelph-Lockport.....	230–300	Grey and brownish, finely crystalline dolomite.
	300–400	Dark brown, finely granular dolomite.
	400–430	Brownish grey, finely crystalline dolomite.
Rochester.....	430–480	Fairly dark grey, limy shale. Some shaly dolomite at the top.
Clinton and Thorold..	480–510	Light grey, finely crystalline dolomite with a little grey shale. Small amount of white sandstone at the base.
Grimsby.....	510–530	Red and green, sandy shale with minor amount of white, medium-grained sandstone.
	530–550	Red and white, medium-grained sandstone with small amount of red shale.
Cabot Head-Manitoulin.	550–610	Grey shale with small amount of limy or dolomitic shale toward the base.
Whirlpool.....	610–640	White, medium- to coarse-grained sandstone.
Queenston.....	640–650	Brick-red shale with green mottling.

Although drilling has covered practically the whole of Dunn township, segregations of wells occur at the following localities: (1) lots 1 to 7, concessions I to III N.; (2) lots 13 and 14, concession I N.; (3) lots 3 to 9, concession I S.; and (4) on the Earl Tract. Elsewhere wells are widely spaced, leaving non-drilled blocks of considerable extent, especially at the south-central part of the township. Gas is found at all the above localities, and about 25 per cent of the wells were initially dry or non-commercial. The "Clinton" is the main producing horizon, but both the Grimsby and Whirlpool contribute to the supply. The following log illustrates the detailed stratigraphy here.

Log of E.S. Jones No. 1 Well

Location: lot 24, con. IV, Dunn tp.
Elevation: 583 feet

Formation	Depth in feet	Lithology
Surface	1–24	Glacial drift.
Onondaga	24–39	Greenish grey, sandy dolomite with light grey to bluish chert.
	39–64	Grey, shaly dolomite with sandy shale at base and bluish chert throughout. Some glauconite.
Salina	64–219	Medium, grey, shaly dolomite with frequent thin zones of brownish, finely crystalline dolomite. Small amount of anhydrite throughout.
	219–249	Brownish grey, finely crystalline dolomite with minor amount of grey, dolomitic shale. Traces of anhydrite.
	249–269	Alternation of brownish grey, finely crystalline dolomite and grey, dolomitic shale.
	269–359	Grey, dolomitic shale with thin zones of brownish dolomite. Traces of anhydrite.
	359–369	Greenish grey, dolomitic shale with traces of anhydrite.
	369–394	Brownish grey, finely crystalline dolomite with grey, dolomitic shale and traces of anhydrite.
	394–404	Greenish, dolomitic shale.
	404–434	Grey and brownish, finely crystalline dolomite with minor amount of grey and greenish, dolomitic shale. Traces of anhydrite.
Guelph-Lockport	434–554	Dark brownish grey, finely granular dolomite.
	554–684	Brown and brownish grey, crystalline and finely granular dolomite.
Rochester	684–724	Dark grey, limy shale with minor amount of grey dolomite.
Clinton	724–744	Light grey, crystalline dolomite with small amount of grey, limy shale. Pyrite throughout.
Grimsby	744–749	White and red, medium-grained sandstone with minor amount of red shale.
	749–769	Red-stained, white, medium-grained sandstone with small amount of red and green shale.
	769–784	Red shale with minor amount of red-stained sandstone.
Cabot Head and Manitoulin.	784–809	Greenish grey shale.
	809–854	Grey shale with minor amount of grey dolomite and shaly dolomite.
	854–869	No samples.
Queenston	869–889	Brick-red shale.

Scattered wells cover the whole of Sherbrooke township, with small concentrations on lots 5 to 8, concession I, and near the lake shore on lots 16 to 19, concession I. The chief producing horizon is the Whirlpool sandstone with the "Clinton" also supplying a small quantity. The following log indicates the stratigraphy here.

Log of Niece and Sons Well

Location: lot 11, con. III, Sherbrooke tp.
Elevation: 591 feet

Formation	Depth in feet	Lithology
Surface	0–28	Surface clay.
Akron-Bertie.....	28–33	Grey, shaly dolomite.
	33–53	Buff, finely crystalline dolomite.
	53–68	Dark grey, limy or dolomitic shale with minor amount of buff dolomite.
Salina.....	68–143	Grey, dolomitic shale with frequent zones of buff, finely crystalline dolomite. Anhydrite throughout.
	143–163	Brownish grey, finely crystalline dolomite with small amount of grey, dolomitic shale. Trace of anhydrite.
	163–198	Grey, dolomitic shale with minor amount of buff, finely crystalline dolomite. Traces of anhydrite.
	198–253	Brownish grey, finely crystalline dolomite. Traces of anhydrite.
	253–273	Grey and green, dolomitic shale with small amount of buff dolomite and anhydrite.
	273–298	Brownish grey, finely crystalline dolomite with small amount of grey, dolomitic shale.
	298–323	Grey, dolomitic shale with traces of anhydrite.
	323–418	Buff, finely crystalline dolomite with traces of anhydrite throughout.
	418–441	Grey, limy shale and brown, granular and finely crystalline dolomite with traces of anhydrite.
Guelph-Lockport.....	441–646	Brownish grey and brown, finely crystalline dolomite with traces of anhydrite at 506, 541, and 596 feet.
Rochester.....	646–708	Dark grey shale and limy shale.
Clinton.....	708–723	Light grey, crystalline dolomite.
	723–733	Grey, shaly dolomite; little grey, dolomitic shale.
	733–743	Grey, crystalline dolomite.
Grimsby.....	743–758	Red and green shale with minor amount of grey, medium-grained sandstone.
	758–763	Red and grey sandstone; small amount of red and green shale.
	763–788	Grey, medium-grained sandstone with minor amonut of red and green shale.

Formation	Depth in feet	Lithology
Cabot Head and Manitoulin.	788–833	Greenish grey shale with a little grey sandstone throughout and grey dolomite at 808 feet.
Whirlpool.....	833–843	Light grey to white, medium-grained sandstone.
Queenston.....	843–898	Brick-red shale with green mottling.

Wentworth County

With the exception of one well on lot 19, con. IV, Ancaster tp., commercial production in Wentworth county is confined to Glanford and Binbrook townships. Drilling has been concentrated in the southern one-third of Binbrook and on lots 13 to 16, concessions VII and VIII, in the southeastern corner of Glanford township. Elsewhere in these townships development has not taken place. Gas is found throughout the drilled area and less than 15 per cent of the wells were initially dry or non-commercial. Chief production is from the Whirlpool and "Clinton", with the Grimsby yielding a small quantity in Binbrook township. The detailed stratigraphy is indicated by the following log.

Log of F. Marshall No. 1 Well

Location: lot 14, con. VIII, Glanford tp.
Elevation: 641 feet

Formation	Depth in feet	Lithology
Surface	0–61	Surface clay, gravel, etc.
Guelph-Lockport.....	61–280	Buff and brownish, finely granular dolomite. Small amount of gypsum between 140 and 150 feet.
Rochester.....	280–300	Dark grey, limy or dolomitic shale with a little brownish dolomite.
Clinton and Thorold..	300–330	Light grey, crystalline dolomite with light grey, medium-grained sandstone in the lower part.
Grimsby.....	330–340	Red, limy shale with minor amount of green shale.
Cabot Head and Manitoulin.	340–370	Red, calcareous sandstone with small amount of red and green shale.
	370–415	Green and grey shale with some limy shale and red sandstone.
Whirlpool.....	415–425	Light grey, medium-grained sandstone.
Queenston.....	425–475	Red shale with green mottling.

Log of Rockton Oil and Gas Company Well No. 3

Location: lot 30, con. IV, Beverly tp.
Elevation: 820 feet

Formation	Depth in feet	Lithology
Guelph-Lockport	0–100	Brownish grey, finely granular dolomite.
	100–140	Dark brownish grey, finely crystalline dolomite wit. black, bituminous partings.
	140–160	Light grey, crystalline dolomite.
	160–195	Light grey to white, coarsely crystalline dolomite with a little grey, limy shale at the base.
Clinton.....	195–230	Light grey, coarsely crystalline dolomite with darker dolomitic shale bands and pyrite.
Grimsby.....	230–270	Chiefly red shale with minor amounts of green shale and pink, sandy shale. Some Bryozoa.
Cabot Head and Manitoulin.	270–280	Grey, crystalline dolomite with small amount of red and green shale.
	280–295	Greenish grey shale with some dolomitic shale.
	295–305	Grey, crystalline dolomite and dolomitic shale.
Whirlpool.....	305–320	White, medium-grained sandstone.
Queenston.....	320–820	Red shale, limy near the top and mottled with green throughout.
Meaford and Dundas.	820–1,000	Grey shale with frequent thin, crystalline, limestone bands.
	1,000–1,420	Grey shale with occasional thin limestone beds and some calcareous sandstone zones. Pyrite at 1,100 and 1,330 feet.
Billings.....	1,420–1,555	Dark grey shale with small amount of bituminous matter throughout.
	1,555–1,650	Dark grey to black, bituminous shale. Pyrite at 1,640 feet. Geisonoceras at 1,640 feet.
Trenton, Black River, and older Palæozoic limestones.	1,650–1,725	Brownish grey, finely crystalline limestone.
	1,725–1,835	Brownish grey, finely crystalline limestone, with grey shale partings and some grey, limy shale.
	1,835–1,875	Brownish grey, shaly limestone.
	1,875–1,940	Dark grey, limy shale with lesser amount of crystalline limestone.
	1,940–1,960	Grey, finely crystalline limestone with grey shale partings.
	1,960–1,995	Dark grey, limy shale with lesser amount of grey, crystalline limestone.
	1,995–2,035	Grey, finely crystalline limestone with dark grey shale partings.
	2,035–2,100	Brownish grey, finely crystalline limestone with dark grey, limy shale partings.
	2,100–2,125	Grey, shaly limestone.
	2,125–2,169	Brownish grey, finely crystalline limestone with light grey, flaky "kaolinite".

Log of Rockton Oil and Gas Company Well No. 3—Concluded

Formation	Depth in feet	Lithology
	2,169–2,197	Brownish grey, crystalline limestone with minor amount of dense, cream-coloured, "lithographic" limestone at 2,183 and 2,197 feet.
	2,197–2,305	Brown, finely crystalline and dense limestone. Pyrite at 2,278 feet.
	2,305–2,325	Dark brownish grey, finely crystalline limestone.
Basal beds	2,325–2,335	Grey limestone and light grey sandstone.
Precambrian	2,335–2,675	White, coarsely crystalline, dolomitic limestone or marble.

Lincoln County

In Lincoln county, only Caistor and Gainsborough townships have yielded gas in commercial quantities, and drilling has been limited to a relatively small part of each. In Caistor, drilling has covered concessions I to III, with concentrations on lots 1 to 10 and 22 to 25. In Gainsborough, drilling has been more or less confined to two localities: (1) lots 1 to 4, concessions I and II; and (2) lots 21 to 28, concessions I and II. Approximately 15 per cent of the wells were initially dry. The chief producing horizon is the Whirlpool sandstone, although the "Clinton" yields a considerable percentage of the total and a few wells draw their supply from all three horizons. The following log illustrates the stratigraphy in this region.

Location: lot 20, con. VI, Caistor tp.
Elevation: 648 feet

Formation	Depth in feet	Lithology
Surface	0–62	Surface clay, etc.
Guelph-Lockport	62–222	Dark brownish grey, finely crystalline dolomite with black, bituminous partings at 107 feet.
Rochester	222–262	Medium to dark grey, limy shale with a little dolomite from 237 to 247 feet.
Clinton	262–292	Light grey, crystalline dolomite with thin zones of grey, limy shale.
Grimsby	292–317	Red, sandy shale with minor amount of green shale and white sandstone.
Cabot Head and Manitoulin.	317–332	Red and green shale with small amount of white sandstone.
	332–387	Greenish grey shale with minor amount of reddish and grey limestone.
Whirlpool	387–402	Light grey, medium-grained sandstone.
Queenston	402–420	Brick-red shale.

Welland County

Some of the earliest drilling was done in Welland county, and many wells exist for which we have no records. Moreover, a considerable number of wells for which more or less incomplete records do exist could not be located in the field, either because they have long since been abandoned, in many instances the casings having been pulled, or because the exact location was never properly recorded.

Available records indicate relatively few and widely scattered wells in Wainfleet and Humberstone townships, the greater number occurring in the latter. In Wainfleet, a few wells seem to be concentrated on lots 36 to 40, concession VI, and on lots 25 to 29, concession I. Elsewhere, extensive blocks of country have not been tested. Development is limited to the western two-thirds of Humberstone township, wells being scattered throughout this part. The extreme eastern part of the township seems to be practically undeveloped. About 15 per cent of the total number of wells in both townships for which we have reliable records were initially dry. Chief yield comes from the "Clinton", but the Whirlpool sandstone is also productive, especially in Wainfleet township. The following logs illustrate the detailed stratigraphy in the respective townships.

Location: lot 41, con. IV, Wainfleet tp.

Formation	Depth in feet	Lithology
	0–200	No samples.
Salina	200–330	Medium and brownish grey, finely crystalline dolomite with minor amount of greenish, limy shale and anhydrite throughout.
	330–350	No samples.
Guelph-Lockport	350–420	Dark brownish grey, finely granular dolomite.
	420–460	Grey and brownish, finely granular dolomite.
	460–480	Medium to light grey and bluish, crystalline dolomite.
Rochester	480–510	Dark grey, limy shale.
Clinton	510–540	Light grey, crystalline dolomite with minor amount of dark grey shale at base. Pyrite in lower 5 feet.
Thorold	540–550	Light grey to white, medium-grained sandstone.
Grimsby	550–590	Red and green shale with light grey and red-stained sandstone.
	590–650	No samples.
Manitoulin	650–665	Light grey, crystalline dolomite with minor amount of grey shale.
Whirlpool	665–675	Light grey to white, coarse-grained sandstone.

Log of Sherkston Well

Location: Sherkston, Humberstone township
Elevation: 600 feet (approx.)

Formation	Depth in feet	Lithology
Onondaga	0–20	Brownish grey, finely crystalline limestone with minor amount of dense, bluish chert.
	20–25	Dense, bluish grey chert.
Oriskany	25–30	Light grey, finely granular, dolomitic limestone with some coarse sandstone.
Akron-Bertie	30–65	Light grey and darker brownish grey, finely granular dolomite.
Salina	65–120	Medium grey, shaly dolomite.
	120–265	Grey and brownish, finely granular, shaly dolomite with small amount of anhydrite throughout.
	265–320	Fairly dark grey, dolomitic shale with little anhydrite.
	320–445	Medium grey and brownish, dolomitic shale with minor amount of brownish, crystalline dolomite. Some anhydrite in upper part.
	445–485	Brownish grey, finely crystalline dolomite with minor amount of dark grey, limy shale. Anhydrite at 455 feet.
Guelph-Lockport	485–625	Medium and dark brown, finely granular dolomite.
	625–655	Dark grey, finely granular dolomite.
Rochester	655–705	Dark grey, dolomitic or limy shale.
Clinton and Thorold	705–735	Light grey, coarsely crystalline dolomite with small amount of sandstone at the base.
Grimsby	735–785	Red, sandy shale and shaly sandstone with minor amount of white, medium-grained sandstone throughout.
Cabot Head and Manitoulin.	785–810	Chiefly red shale with a little grey shale and white sandstone.
	810–830	Grey shale.
Whirlpool	830–846	Light grey to white, medium- to coarse-grained sandstone.

Much of the eastern part of Bertie township seems to be more or less untested, although many wells now unknown are doubtless present. Available records show most of the wells to be situated in the western part of the township, but widely scattered drilling has been done in the eastern part. According to our records, between 25 and 30 per cent of the wells were initially dry or non-commercial. Gas is obtained from all three horizons, with the Whirlpool probably yielding the greatest quantity.

Only the southern part of Willoughby and Crowland townships have been tested to any extent. There are small concentrations of wells on lots 1 to 4, cons. III, IV, and VIII, Willoughby tp., and on lots 1 to 6, cons. IV to VII, Crowland tp. The northern parts of these townships are for the most part untested except for a few wells situated near the north boundary of Crowland. About one-third of the wells were initially dry or non-commercial. The Whirlpool sandstone is the main producing horizon, although smaller quantities of gas are also obtained from the "Clinton".

RESERVOIR ROCKS

The two main types of reservoir rocks in the Niagara Peninsula are the limestone of the Clinton and the sandstones of the Thorold, Grimsby, and Whirlpool members of the Medina formation.

The Whirlpool sandstone is composed chiefly of fine to medium, subangular quartz grains, which are largely secondarily enlarged. Alling[1] states that the added silica does not seem to completely fill the voids and the rock is cemented by chlorite and other argillaceous matters as well as by silica. The porosity is primary and has been estimated at about 10 per cent.

The Grimsby as a reservoir rock is quite variable. At the outcrop it consists of red and grey, medium-grained sandstone with shaly zones and lenticular masses of sandstone entirely enclosed in shale or sandy shale. The quartz grains are subangular to rounded, average about 0·1 mm. in diameter, and are cemented by chlorite, kaolin, and some calcite. The porosity is primary and probably more or less discontinuous, as evidenced by the irregularity in production from this horizon.

The Thorold is a quartz sandstone of rounded, subangular, and even angular grains, with an average diameter of 0·1 mm. Argillaceous materials form about 20 per cent[2], and include chlorite, muscovite, and rusty biotite. Calcite also occurs in recrystallized grains as well as forming cementing material. The porosity is doubtless primary in origin.

The Irondequoit is considered by some to be the producing horizon in the Clinton. This is a light grey, coarsely crystalline limestone or dolomitic limestone commonly containing a profusion of crinoid columns. The percentage porosity and its origin are somewhat speculative. The primary effective porosity is in all probability very low, as is the case with most known limestone reservoir rocks. It seems probable that the effective porosity is largely secondary and due to solution or leaching. How this took place is not definitely known. The most common procedure is by ground water circulation dissolving the more soluble constituents of the rock. This practically presupposes an erosion period during its operation. We have not recognized any unconformity at the top of the Clinton in the present map-area, but the Clinton formation is known to pinch out toward the northwestern part of the Niagara Peninsula. Shoreline conditions may have prevailed here, allowing leaching to take place.

[1] Alling, H. L.: Proc. Rochester Acad. Sci., vol. 7, No. 7, 1936, p. 194.
[2] Alling, H. L.: Op. cit., p. 196.

ACCUMULATION

From a study of the map (585A) illustrating structure, it does not appear that structure is the principal controlling factor in the accumulation of natural gas in the Niagara Peninsula. We would emphasize that here we are using the term structure in the sense of forms resulting from diastrophic causes and not from what might be termed stratigraphic or depositional conditions. A cursory examination of the distribution of the producing and non-producing wells and their relation to the structure contours drawn on the Clinton formation might result in the conclusion that the chances of obtaining gas were equally good throughout the area regardless of the structure indicated by the contours. When one observes, as is in many instances the case, dry holes completely surrounded by producers, such a conclusion seems to some degree warranted. It must be remembered that a great number of the wells yield from two horizons and that in most cases the records give only the total yield, thereby giving little idea of the individual yield of the respective horizons in any given well. There is also a considerable number of wells that yield from all three horizons.

We have seen that gas has been obtained throughout the entire drilled area. The percentage of dry holes is probably less than 30 per cent of the total, and their distribution is such that no definite relation to structural conditions can be stated. Even at localities where structural closure is known, for example in Rainham township, wells having the greatest initial volume flow are not situated at the crest of the structure. The number of closures on the Clinton is extremely small and all are of the most gentle type.

As seen at the outcrop, both in Niagara gorge and elsewhere, the Grimsby shows depositional irregularities such as lenticular masses, some of considerable size, of sandstone completely enclosed in shale. Such lenses could act as traps to migrating gas and oil and if the voids in such rock were even as high as 10 per cent the lenses might, depending on their size, easily account for wells of considerable initial production. In the case of the Thorold sandstone it was found by Stewart[1] that where the calcareous cementing material was greatest in amount, production was least and that the largest producing wells were at localities where the reservoir sandstone was purest. We know little regarding causes of accumulation in the Whirlpool, but differential cementation probably plays a dominant part. With regard to the Irondequoit or upper Clinton, this rock is known to contain organic reefs of considerable size. It is suggested that these reefs may arrest migration and so play an important part in accumulation.

It is the writer's belief that porosity, differential cementation, and stratigraphic form constitute major factors in causing accumulation, and that these factors combined with gentle anticlinal rolls and local flattenings of the regional dip account for the gas fields so far developed in the Niagara Peninsula.

PRODUCTION

We have already seen that in the Niagara Peninsula production is from three main horizons, the "Clinton", Grimsby, and Whirlpool. Most

[1] Stewart, J. S.: Personal communication.

of the wells yield from at least two of the horizons, with some producing from all three. In the case of most wells it is the total yield that is recorded, so that the quantity from each individual horizon is not known.

The initial open flow volumes differ greatly in different wells throughout the area, and in a great number of instances adjacent wells show greatly differing initial yields. Such a condition seems to point to variable reservoir sizes, discontinuous porosity, and probably abnormal conditions of rock pressure. The accompanying table, compiled from drillers' records, gives a general idea of initial volumes by listing for each township, the highest and lowest individual initial yields with the average, which is based on the number of wells that were initially producers and for which we have records in each township. It will be understood that the total number of initially producing wells listed for each township may not necessarily coincide with the actual number present, as some may exist for which we have no data.

Township	Number of producing wells	Highest initial volume in thousand cu. ft.	Lowest initial volume in thousand cu. ft.	Average initial volume in thousand cu. ft.
Canborough	148	300	1	39
Dunn	51	2,000	12	164
Moulton	151	500	5	45
N. Cayuga	200	750	1	79
Oneida	91	395	3	55
S. Cayuga	21	336	8	70
Sherbrooke	12	2,500	13	541
Seneca	155	3,000	2	90
Rainham	254	640	4	104
Walpole	127	500	7	96
Bertie	41	320	1	38
Crowland	21	450	5	55
Humberstone	27	4,500	10	355
Wainfleet	15	400	12	58
Caistor	66	252	7	60
Gainsborough	33	320	1	36
Binbrook	64	246	10	70
Glanford	21	443	1	88

According to Harkness[1]; "the open flow in Clinton wells decreases 50 per cent within the first 2 years, and from the fifth year onward about 10 per cent of the previous years flow. The average life is 20 years although the first well drilled in Welland county in 1889 is still producing a little gas from the Whirlpool sandstone".

All the gas produced in the Niagara Peninsula is of the "dry" variety and the absence of H_2S shows it to be "sweet" also. No purification is required before utilization. Harkness[1] states the B.t.u. average about 1,040. Although no oil in commercial quantities has been obtained, it is interesting to note that in 1891 two wells of the Provincial Natural Gas and Fuel Company on lots 11 and 12, con. III, Humberstone tp., found oil in the Whirlpool sandstone at depths of about 780 feet. Only about 2 barrels a day from each well was produced.[2]

[1] Harkness, R. B.: "Geology of Natural Gas"; A.A.P.G., 1935, p. 84.
[1] Harkness, R. B.: Op. cit., p. 86.
[2] Clapp, F. G.: Mines Branch, Dept. of Mines, Canada, Pub. 219, vol. II, 1910, p. 212.

Any statement seeking to account for the recorded reservoir pressures must be highly speculative. Most of the wells produce from two horizons simultaneously, and some from three. The vertical distance between the highest and lowest of these horizons is appreciable and is sufficient to account for a marked difference in pressure if the pressure is related to the local hydrostatic head. Having in mind the multiple producing horizons, there exists some doubt in the writer's mind as to the interpretation of the recorded pressures.

Available records seem to indicate that the initial reservoir pressures differ erratically. It is true that at several more or less localized places pressures are fairly uniform, but considering the producing area as a whole uniformity of pressure is not a feature. As compared with the theoretical pressure due to hydrostatic head, the initial pressures of by far the greater number of wells for which we have records are subnormal, and those of a considerable number are somewhat above the normal. The initial pressures of a relatively few wells closely approximate the theoretical pressures due to hydrostatic head.

In attempting to account for these abnormal pressures we find certain important data missing. For instance, we lack reliable information regarding both the general water conditions and the action of edge waters during depletion of the reservoirs. It is suggested that partial or total absence of water in the rocks surrounding a producing reservoir might have an effect upon the pressure in that reservoir. In addition, the lenticular structure of much of the Grimsby producing horizon seen on exposure would point to the presence of a series of comparatively small reservoirs enclosed in less pervious shale. Within these limited enclosed reservoirs abnormal pressures may be built up. Finally, differential cementation in both the Thorold and Whirlpool may also limit the size of contained reservoirs and so affect pressures to some extent.

FUTURE GAS POSSIBILITIES OF NIAGARA PENINSULA

Little of a definite character can be said regarding this question. Keeping in mind the existence of many wells that, for various reasons, could not be located, examination of the accompanying structure contour map shows many parts of the area to be practically completely explored, leaving, in general, relatively small blocks of land untested. Such is especially the case throughout Haldimand county, where development seems to be nearly complete in Walpole, Rainham, North Cayuga, Canborough, and Moulton townships, and drilling, though less concentrated, covers most of each of the remaining townships. The scarcity of structural closures on the Clinton horizon, and the fact that accumulation is controlled largely by lithological and stratigraphical irregularities, renders it difficult and well nigh impossible to point out from the structure contours definite localities that appear more favourable than others as drilling sites. Moreover, the relation of the dry holes and producing wells to the structure contours indicates that one cannot say with any assurance whether any one of the non-drilled localities is, or is not, a favourable place to drill. In fact, one might quite properly conclude that, except where structural closure is known (which is always a favourable condition), equal possibilities of

is confined to about the southern two-thirds of the Niagara Peninsula, and lies south of the Niagara escarpment. In Welland, Lincoln, and Wentworth counties, the townships bordering the top of the escarpment are almost entirely untested so far as drilling is concerned. This is probably due to the belief that as all the known producing horizons of the adjoining region obtaining gas exist in all the untested localities within the general producing area. Drilling is still in progress in many parts of Walpole, Rainham, and North Cayuga townships.

Welland county embraces larger untested areas than does Haldimand. Such areas are situated chiefly in Wainfleet, Humberstone, Crowland, and Willoughby townships. Throughout these townships wells are in general so scattered and widely spaced that they do not afford adequate data upon which to base definite subsurface structure contours. The developed localities, however, show the same general structure relations as seen in Haldimand, so that it seems a reasonable assumption that the observations made regarding gas possibilities in Haldimand apply equally well in Welland county.

The remainder of the commercially producing part of Niagara Peninsula is in Lincoln and Wentworth counties, where the southern parts of Gainsborough, Caistor, Binbrook, and Glanford townships have been tested. Here, again, the general structure is essentially similar to that of Haldimand county. The stratigraphy, so far as that of the producing horizons is concerned, is also similar, so that the remarks relative to possibilities of obtaining further production from the non-drilled localities in Haldimand apply also in Lincoln and Wentworth counties.

OTHER AREAS

The commercially producing part of the Toronto-Hamilton map-area outcrop along the escarpment, proximity of these townships to the escarpment would render it highly probable that any gas that might have been present would long since have escaped at the outcrop. There are several known gas seepages along the escarpment at various horizons, showing that gas is present in these rocks. In view of the probable existence of a series of more or less detached and limited reservoirs formed largely by variations in porosity, differential cementation, and enclosed sandstone lenses, it is suggested that depletion of the reservoirs may not have taken place to any great distance from the outcrop, so that much of the above-mentioned, untested area might warrant test drilling.

That part of the map-area north of the Niagara Peninsula has so far yielded neither gas nor oil in commercial quantities, although both these products are known to be present at various horizons and localities. The Niagara escarpment parallels the west boundary of the map-area here, leaving to the west a narrow upland strip extending from Hamilton to the north boundary of the map-area; east of the escarpment lies the lowland area underlain by Ordovician strata.

The narrow upland area bordering the top of the escarpment has not been tested by drilling. The stratigraphy, so far as the Silurian system is concerned, shows some changes from that of the Niagara Peninsula.

Note re Page 136

The first five lines of text on page 136 have been printed in an incorrect position. They should appear towards the middle of the page and should follow after the first line of the section now headed by the words, "Other Areas". The opening part of this section should read as follows.

OTHER AREAS

The commercially producing part of the Toronto-Hamilton map-area is confined to about the southern two-thirds of the Niagara Peninsula, and lies south of the Niagara escarpment. In Welland, Lincoln, and Wentworth counties, the townships bordering the top of the escarpment are almost entirely untested so far as drilling is concerned. This is probably due to the belief that as all the known producing horizons of the adjoining region outcrop along the escarpment, proximity of these townships to the escarpment would .....

Of the three producing horizons there, only the Whirlpool sandstone persists. The Grimsby and Thorold are replaced by a thickening of the Cabot Head with a change from arenaceous to dominantly argillaceous and calcareous lithology. The Clinton has also disappeared north of Hamilton, so that the Guelph-Lockport rests directly upon the Cabot Head member of the Medina formation. The underlying Ordovician is essentially similar to that of the Niagara Peninsula to the south, where no production has so far been obtained from these rocks.

It is not expected that any appreciable quantity of natural gas would be found in the Silurian of this region. The Whirlpool sandstone is thin and outcrops at several localities relatively close to the west boundary of the area. The overlying Manitoulin and Cabot Head beds do not form favourable reservoir rocks, and the Guelph-Lockport outcrops, thus lacking the necessary cover required to retain any hydrocarbons it might contain.

Deeper drilling into the underlying Ordovician may have more to recommend it; this possibility will be discussed in the remarks devoted to the lowland area.

We have no well samples from the upland area, but the following log of a well located only a short distance to the west will illustrate the detailed stratigraphy.

Log of Bollert Oil and Gas Company Well No. 1

Location: lot 7, con. IV, Puslinch tp., Wellington co.
Elevation: 1,038 feet

Formation	Depth in feet	Lithology
Surface	0–58	Surface gravel, sand, etc.
Guelph-Lockport	58–93	Light grey and cream-coloured, finely granular dolomite.
	93–153	Light grey, finely crystalline dolomite.
	153–173	Brown, crystalline dolomite.
	173–208	Dark brownish grey dolomite with dark, bituminous shale partings.
	208–288	Light grey, dense dolomite.
	288–368	Light grey and bluish grey, finely granular dolomite with pyrite throughout.
Cabot Head.....	368–388	Red and greenish grey shale with minor amount of lime.
	388–418	Grey shale with minor amount of lime.
Manitoulin.....	418–443	Grey, crystalline dolomite with minor amount of grey, shaly dolomite.

Log of Bollert Oil and Gas Company Well No. 1—Concluded

Formation	Depth in feet	Lithology
Whirlpool	443–448	Mixture of grey dolomite and light grey sandstone.
Queenston	448–903	Red shale with green mottling.
Meaford and Dundas	903–1,573	Grey shale with occasional, thin, crystalline limestone and calcareous sandstone zones.
Billings	1,573–1,681	Dark grey shale, becoming black and bituminous toward the base.
Trenton and pre-Trenton limestone.	1,681–1,825	Brownish grey, finely crystalline limestone with frequent dark grey, shale partings.
	1,825–1,880	Grey, finely crystalline limestone with minor amount of dark grey shale.
	1,880–1,945	Fairly dark grey, shaly limestone with minor amount of grey shale.
	1,945–2,045	Grey, finely crystalline limestone with thin zones of dark grey, calcareous shale.
	2,045–2,100	Brownish grey, finely crystalline limestone.
	2,100–2,170	Light grey and brownish, finely crystalline limestone with dark grey shale partings and light grey, flaky kaolinite.
	2,170–2,205	Grey, finely crystalline limestone with minor amount of greenish grey, limy shale. Pyrite at 2,205 feet.
	2,205–2,240	Brown, finely crystalline limestone. Pyrite at 2,225 and 2,235 feet.
	2,240–2,275	Brownish, finely crystalline limestone with greenish shale partings. "Lithographic" limestone at 2,245 and 2,250 feet.
	2,275–2,310	Dark brown, finely crystalline limestone.
	2,310–2,360	Brownish grey, finely crystalline limestone with minor amount of greenish shale and calcareous sandstone.
Precambrian	2,360–2,603	Mostly angular quartz, biotite, green schist, and some feldspar.

The lowland comprises all the territory north of the Niagara Peninsula and east of the escarpment and is underlain by Ordovician strata. The rocks, in descending order, consist of the Queenston red shale, the Meaford limestone and shale, the Dundas shale, and the Billings shale, all of which are exposed at various localities; these are underlain by the Trenton limestone, the pre-Trenton strata, including Black River and older Palæozoic limestones, and various thicknesses of basal beds resting directly upon the Precambrian, the whole being known only from well samples. All the formations above the Trenton have been described in Chapter III of this work; the detailed lithology of the lower formations is illustrated by the following logs prepared from well samples.

Location: lot 10, con. I, West Flamborough tp., Wentworth co.
Elevation: 442 feet

Formation	Depth in feet	Lithology
Surface	0–231	Surface gravel, sand, etc.
Queenston	231–431	Red shale; occasional thin, limy beds near top.
Meaford and Dundas	431–550	Grey shale with frequent, grey, crystalline limestone zones.
	550–1,025	Grey shale with occasional, thin, grey, crystalline limestone and sandy beds.
Billings	1,025–1,275	Dark grey shale, black and bituminous in the lower 70 feet.
Trenton and pre-Trenton beds.	1,275–1,520	Grey and brownish, finely crystalline and dense limestone with partings and thin, dark grey shale beds throughout.
	1,520–1,535	Grey, finely crystalline limestone with small amount of light grey, flaky kaolinite.
	1,535–2,060	Medium and dark brownish grey, finely crystalline limestone. Many dark grey shale partings.
Basal beds	2,060–2,100	Rounded and angular quartz grains with biotite, grey limestone, grey shale, and pyrite.
Precambrian	2,100–2,123	Biotite granite.

Location: lot 13, con. III, Vaughan tp., York co.
Elevation: 694 feet

Formation	Depth in feet	Lithology
Surface	0–290	Clay, sand, gravel, quicksand.
Dundas	290–370	Grey, clay shale.
Billings	370–460	Hard, dark grey and brownish shale.
	460–560	Hard, dark grey shale.
Trenton and pre-Trenton beds.	560–650	Grey, shaly limestone.
	650–655	Grey, fossiliferous shale.
	655–675	Grey, shaly limestone.
	675–735	Grey, fossiliferous shale.
	735–740	Grey, shaly limestone.
	740–1,015	Grey, fossiliferous shale and shaly limestone.
	1,015–1,050	Grey, shaly limestone.
	1,050–1,070	Grey, compact, shaly limestone.
	1,070–1,105	Grey, compact limestone.
	1,105–1,110	Dark grey, compact to granular limestone.
	1,110–1,115	Grey, compact limestone.
	1,115–1,120	Light grey limestone, somewhat chalky.

Location: lot 13, con. III, Vaughan tp., York co.
Elevation: 694 feet—Concluded

Location	Depth in feet	Lithology
	1,120–1,130	Grey, fossiliferous limestone.
	1,130–1,135	Light grey, granular to crystalline and porous limestone.
	1,135–1,145	Light grey, crystalline limestone.
	1,145–1,150	Light grey, crystalline limestone with some sand.
	1,150–1,160	Coarse-grained, water-washed sand with green, chloritic shale.
	1,160–1,173	Arkose bed.
Precambrian.....		

Location: lot 15, con. I N.D.S., Toronto tp., Peel co.

Formation	Depth in feet	Lithology
Surface.....	0–4	Sand, clay, etc.
Meaford and Dundas..	4–607	Grey and greenish shale with frequent calcareous zones.
Billings.....	607–785	Dark grey shale; black and bituminous in lower 30 to 40 feet.
Trenton and pre-Trenton.	785–955	Grey and brownish, finely crystalline limestone.
	955–1,160	Grey, crystalline limestone with thin zones and partings of dark grey shale. Some pyrite.
	1,160–1,250	Brownish grey, finely crystalline limestone with dark grey shale partings.
	1,250–1,380	Grey and brownish, crystalline and dense limestone. Much pyrite. Some light grey, flaky kaolinite.
Basal beds.....	1,380–1,425	Light grey and greenish sandstone. Some angular quartz, biotite, and green, chloritic schist.

The basal beds represent the sediments of the initial encroachment of the sea over the old Precambrian land surface. They differ in thickness and lithology from place to place and include arkose, sandstone, arenaceous limestone, and dolomite.

No satisfactory criteria have been found upon which the thick series of calcareous rocks between the basal beds and the Billings formation can be separated into their respective formations in well samples. This series includes the Trenton and at least the upper part of the Black River group, represented by the Leray and Lowville formations, and is here logged as a single unit.

The lower part of the Billings was formerly classed as Collingwood and is characteristically a black, laminated, bituminous shale; it grades upward into the grey clay slightly bituminous shale of the main part of

the Billings formation. The lower contact is sharp and readily recognizable. Sproule[1] reports an erosional break between the "Collingwood" and Cobourg (upper Trenton) in the Georgian Bay region and on Manitoulin Island; this condition is not detectable in any of the well samples examined by us.

Likely and favourable reservoir rocks are not very plentiful in this part of the area. The Queenston need not be considered in this regard. The underlying Meaford and Dundas are together dominantly argillaceous, but the occasional crystalline limestone beds may function as reservoir rocks under favourable conditions of porosity and structure. The Billings, like the Queenston, is too finely textured and impervious to act as a reservoir. The Trenton is probably the most favourable. Like most limestones, however, its value as a reservoir rock depends largely upon its possession of secondary porosity. This is usually developed by the leaching and dissolving action of circulating ground waters, and hence presupposes a period of erosion. We have already seen that the top of the Trenton is one of erosion in the Georgian Bay and Manitoulin Island districts, although Sproule[2] states that at the former locality the hiatus is at a minimum. Whether this condition prevails throughout the area here under discussion cannot be said. Finally, the basal beds, consisting as they do at some localities of arkose and sandstone, may, under the proper conditions of porosity and structure, act as reservoir rocks.

The most likely source rocks are the black bituminous shales of the lower part of the Billings formation. These shales are known to be petroliferous, and oil has been extracted from them in the past. In addition, the Gloucester shales and many of the large number of dark shale partings present throughout the Trenton and pre-Trenton series may also act as source rocks.

Less is known regarding the detailed structure than about any other character of these Ordovician rocks. Reliable data are too scattered and meagre to indicate subsurface structures, and without knowledge of these our ideas regarding the economic possibilities are more or less conjectural. The regional attitude of the strata as a whole is a gentle dip toward the southwest and away from the Canadian Shield to the north. With the exception of minor crumplings and breaks observed within the Queenston and Dundas formations, no faults of any appreciable displacement are known to the writer.

Widely spaced and scattered drilling has been done in various parts of Halton, Peel, and York counties, with no encouraging results. Information regarding much of this drilling is both incomplete and unreliable, but certain conclusions can be drawn from it.

Peel County. Several wells were drilled about one mile north of Inglewood in Caledon township. At one well gas was found in the Dundas at about 553 feet, and the initial flow was reported as 475,000 cubic feet a day. The reservoir was probably formed by crystalline limestone bands within the shale. Another well found gas in the Meaford, Dundas, and Trenton, amounting to about 300,000 cubic feet a day, and a third one is reported to have had an initial flow of 40,000 cubic feet a day from the

[1] Sproule, J. C.: Geol. Surv., Canada, Mem. 202, 1936, p. 99.
[2] Sproule, J. C.: Op. cit.

Dundas and Meaford rocks. No apparent structure is present here, so that accumulation was probably controlled by other causes, such as differences in porosity and stratigraphic irregularities.

On lot 25, con. I, Chinguacousy tp., a well was drilled to the Precambrian at 1,732 feet. A show of gas was obtained in the Dundas at 555 feet.

Small quantities of gas have also been found in both the Dundas and Trenton rocks near Cooksville.

York County. A number of wells have been drilled into bedrock in this county, but so far as known all were failures. A well on lot 11, con. III, Vaughan tp., struck a show of gas in the Dundas at about 210 and 415 feet, and again in the Trenton at 851 feet. Small quantities have also been found in the same rocks in Etobicoke township near Toronto.

Halton County. At least eight deep wells have been drilled in this county. Available records show that at least three were put down at, and in the immediate vicinity of, Milton in Trafalgar township, and two or three others at Milton Heights in Nassagaweya township. One well in the Brandon brick-yard near Milton struck a little gas near the base of the Queenston. Another well about 500 feet distant obtained some oil at 247 or 302 feet below the top of the Trenton. Still a third well, located just north of the Canadian Pacific Railway station at Milton, obtained a flow of gas in the Trenton at 1,610 to 1,620 feet, sufficient to supply three families for domestic use.[1] At Milton Heights, two wells were drilled on lot 3, con. VII, Nassagaweya tp. One encountered a small quantity of gas at 368 feet, probably in the Meaford, and the other obtained an initial flow of 5,000 cubic feet a day from the Trenton at depths of 1,710 and 1,725 feet.

The results of actual tests made at widely separated districts in the "lowland" area are not encouraging. Showings and small flows of gas have been found in both the Dundas and Trenton at many localities; in a few instances, initial volumes have apparently been quite high, but these have lasted only a short time so that nothing of commercial significance has been discovered.

It is not probable that important discoveries will be made in the Dundas formation. Few conditions are in favour of the occurrence of hydrocarbons and many indicate the improbability of their presence except in small quantities. Favourable source rocks are present and, at least in the western part of the area, the most likely rocks to form reservoirs do possess sufficient impervious covering to retain any gas or oil they may contain. On the other hand, there are serious difficulties in regard to the migration and accumulation of any hydrocarbons that might originate in the source rocks. The probable reservoir rocks are separated from the source rock by relatively impervious shales, through which migration must take place. The Dundas is dominantly argillaceous; faults of any appreciable displacement are unknown and jointing is not a feature of any of the exposures examined. It would seem, therefore, that avenues for migration are at a minimum. The most favourable rocks to function as reservoirs are thin, calcareous and limy, sandstone bands. The primary effective porosity of these is probably very low and the development of any secondary porosity through leaching is most improbable in view of

[1] Williams, M. Y.: Geol. Surv., Canada, Sum. Rept. 1917, pt. E, p. 21.

the absence of any unconformity within a reasonable vertical distance. In addition, these rocks have never been subjected to diastrophic movements sufficient to result in local structures that would act as points of accumulation. The Dundas outcrops at many localities throughout the central and eastern part of the area, thus offering a means of escape for whatever gas and oil might have migrated to these rocks.

Prospects of production from the Trenton seem equally discouraging, although these rocks have more to recommend them than has the Dundas formation. The Trenton is everywhere covered by the Billings source rocks, and there is no apparent reason why a downward migration should not take place, in fact, such a movement would encounter less resistance than would an upward one. It is true that in the eastern part of the area the Billings is at the surface, but in the central and western parts a considerable thickness of impervious shale overlies these rocks; in view of the belief that migration does not take place over very extensive lateral distances, it is not thought that the western part of the region would necessarily be drained through lack of cover in the eastern part. What gas has been found in the Trenton has been confined to the upper 200 or 300 feet of the formation, indicating that the porosity is more favourable there than elsewhere. The lower part of the Trenton and pre-Trenton series is in general more dense in texture and, therefore, less suited to function as a reservoir rock. We have no definite data regarding the detailed structure of the Trenton; we are not aware of the presence of structural closure that would afford favourable conditions for accumulation, and as no severe deformation of these rocks has taken place it seems unlikely that such closure would be found. It is a reasonable assumption, therefore, that any accumulation would be controlled largely by conditions of porosity.

Effective porosity in limestones is usually secondary and due chiefly to leaching or solution by ground water, and such action presupposes an erosional period. An unconformity is present between the Trenton and Billings in the Georgian Bay and Manitoulin regions. Sproule[1] states that at Georgian Bay the hiatus is at a minimum. This would indicate a shorter period of time during which ground water could act upon the limestone there. If the unconformity does not extend southward into the present area (there is no apparent indication of it here), lack of suitable porosity may well account for the discouraging results so far obtained by drilling into the Trenton formation. As the porosity of the rock cannot be foretold, it is impossible to indicate any locality that might be more favourable than another as a drilling site, and yet it cannot be said that the Trenton offers absolutely no possibility as a potential producing formation. Only drilling can positively test this formation.

Both gas and oil have been found in the basal beds in other regions, and these beds may form reservoirs in this area. Downward migration could take place by way of faults and joints in the overlying limestones and be arrested by the Precambrian surface. The basal beds doubtless occupy depressions in the Precambrian surface, and it seems not improbable that considerable production might be obtained if reservoirs of sufficient size were penetrated. Here again sufficient data to outline or even to prove the existence of such reservoirs is not available and drilling would be the only test.

[1] Sproule, J. C.: Op. cit.

CHAPTER VI

WELL RECORDS

The following table of well records has been prepared by J. S. Stewart of the Geological Survey, from drillers' records and from field work conducted by him. In the table the yield represents the initial open flow or volume of the well in thousands of cubic feet a day, and the pressure is the initial rock or reservoir pressure in pounds per square inch. The following abbreviations are used:

B.F.	Broken Front
B.F.N.R.	Broken Front Niagara River
C.	From Canborough
E.	East
E.C.R.	East communication road
E.S.C.R.	East of Stony Creek road
E.R.	East of McKenzie road
L.E.	Lake Erie Survey
L.R.	Lake range
N.	North
N.F.R.	North of Forks road
N.R.	Niagara River Survey
N.T.R.	North Talbot road
R.F.G.R.	Range from Grand River
R.R.	River range
S.	South
S.F.R.	South Forks road
Sq. In.	Square inch
S.T.R.	South Talbot road
T.R.	Talbot road
W.	West
W.C.R.	West communication road
W.R.	West of McKenzie road
W.S.C.R.	West of Stony Creek road
S.D.R.	South Diltz road

Wells in Canborough Township, Haldimand County

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
5	1	Oswego Gas Co.		1920	591	642	Salina			32	225	53	
5	1	Harry L. Emerson No. 5	2,200 ft. S. of N. road 850 ft. W. of E. line.	1936	590	577	Salina						
6	1	Harry L. Emerson No. 2	3,300 ft. S. of N. road 400 ft. W. of E. line	1935	586	590	Salina	450 535	Clinton Whirlpool	58	125	82	Sulphur water at 60 ft.
6	1	Harry L. Emerson No. 1	800 ft. N. of S. road 800 ft. W. of E. line.	1935	580	581	Salina			35	115	70	Sulphur water at 55 ft.
6	1	Harry L. Emerson No. 3	3,800 ft. S. of N. road 1,500 ft. W. of E. line	1932	588	647	Salina	490 597	Clinton Whirlpool	45	125	73	Artesian water at 80 ft.
6	1	Harry L. Emerson No. 4	2,800 ft. S. of N. road 1,000 ft. E. of W. road.	1935	592	559	Salina			18	135	83	
6	1	Harry L. Emerson No. 5	2,200 ft. S. of N. road 2,200 ft. W. of Robinson road.	1936	591	627	Salina	437 492	Clinton ?	28		81	
6	1	Harry L. Emerson No. 11		1937	600	606	Salina			13	140	80	
7	1	Harry L. Emerson No. 6	2,900 ft. N. of S. road 25 ft. W. of E. line	1936	589	554	Salina	452 501	Clinton Whirlpool	18	135	83	Black water at 83 ft.
7	1	Lincoln Gas Co. King No. 1	400 ft. N. of S. road 1,000 ft. W. of E. line.	1932	593	526	Salina			14	125	73	
7	1	Teeft No. 1	1,500 ft. W. of E. road 700 ft. S. of N. road.	1927	591	570	Salina			49	185	83	
7	1	Teeft No. 2	2,850 ft. S. of N. road. 1,100 ft. E. of W. road.	1927						45	145	80	
7	1	Lincoln Gas Co. Tisdale No. 1	3,000 ft. S. of N. road 700 ft. W. of E. road.		566	530	Salina			59	210	82	
7	1	Dominion Natural Gas Co. Fulson No. 2.		1929	566								Abandoned.

Wells in Canborough Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
8	1	Dominion Natural Gas Co.... Bygrave No. 1.	1,200 ft. E. of W. road on north boundary.	1930	595	575	Salina....	425 532	Clinton... Whirlpool	28	154	73	Fresh water at 75 ft. Black water at 275 ft.
9	1	Dominion Natural Gas Co.... Dault No. 1.....	300 ft. S. of N. line..... 100 ft. W. of E. road.	.....	595	580	Salina....	.....	.....	46	.....	70	
9	1	Scott No. 1.....	100 ft. S. of Talbot road 900 ft. E. of W. line.	.....	581	626	Salina....	.....	.....	.....	.....	.....	
10	1	Mohawk Gas Co..... A. Ricker No. 1.....	1,400 ft. N. of Talbot road 100 ft. W. of E. road.....	1932	595	524	Salina....	382	Clinton...	20	135	73	Fresh water at 75 ft. Black water at 154 ft.
10	1	A. Ricker No. 2.....	2,700 ft. N. of Talbot road 200 ft. W. of E. road.	1935	597	550	Salina....	.....	.....	19	132	74	Black water at 160 ft.
10	1	A. Ricker No. 3.....	3,100 ft. N. of S. road..... 900 ft. E. of W. line.	1936	597	521	Salina....	442	Grimsby.	9	110	65	Black water at 270 ft.
11	1	Mohawk Gas Co.....	1,200 ft. E. of W. line on north boundary.	1932	612	521	Salina....	415 521	Clinton... Whirlpool	1	.....	64	Fresh water at 65 ft. Black water at 157 ft.
12	1	Dominion Natural Gas Co.... Ricker No. 1.....	800 ft. S. of Talbot road..... 100 ft. W. of E. line.	.....	592	.....	Salina....	.....	.....	.....	.....	.....	Abandoned.
12	1	Ricker No. 2.....	2,300 ft. N. of Talbot road 800 ft. W. of E. line.	.....	603	.....	.....	.....	.....	.....	.....	.....	
13	1	Natural Gas Investment..... McKillop No. 1.....	2,800 ft. S. of N. line on east boundary.....	 1932	 613	 608	..... Salina....	439 548	Clinton... Whirlpool	21	95	74	Black water at 76 ft.
13	1	McKillop No. 2.....	3,500 ft. S. of N. line..... 500 ft. W. of E. line.....	1932	612	622	Salina....	421 455 553	Clinton... Grimsby Whirlpool	23	100	57	Water at 65 ft.
13	1	Aragain Gas Syndicate..... Bartlett No. 3.....	2,850 ft. S. of N. line..... 1,200 ft. E. of W. line.....	1933	615	573	Salina....	452 533	Clinton... Grimsby.	40 22	125	59	Fresh water at 80 ft. Sulphur water at 200 ft.
13	1	Bartlett No. 4.....	4,500 ft. S. of N. line..... 400 ft. E. of W. line.....	1934	615	594	Salina....	....	Grimsby. Whirlpool	50	100	63	Fresh water at 80 ft. Sulphur water at 200 ft.

13	1	Bartlett No. 5	3,100 ft. S. of N. line..... 900 ft. E. of W. line.....	.....	613	594	Salina....	.....	Grimsby. Whirlpool	15	125	54	Fresh water at 55 ft. Black water at 125 ft.
13	1	Bartlett No. 6	2,400 ft. S. of N. line..... 800 ft. E. of W. line.....	1934	619	583	Salina....	.....	Grimsby Whirlpool	63	95	67	
13	1	Bartlett No. 1	4,800 ft. S. of N. line..... 1,400 ft. E. of W. line.	1932	612	560	Salina....	.....	.....	7	90	58	Fresh water at 65 ft.
13	1	Bartlett No. 2	5,800 ft. S. of N. line..... 600 ft. E. of W. line.	.....	614	.....	Salina....	.....	.....	.....	.....	.....	Abandoned.
13	1	Dominion Natural Gas Co.... Shaver No. 2	1,700 ft. S. of Talbot road. 300 ft. E. of W. line.	1930	569	610	Salina....	.....	.....	.....	.....	.....	Abandoned.
13	1	Shaver No. 3	1,900 ft. S. of Talbot road 200 ft. W. of E. road.	1930	569	638	Salina....	.....	.....	.....	.....	.....	Abandoned.
14	1	Aragain Gas Syndicate..... Mickle No. 1	3,000 ft. S. of N. line..... 100 ft. W. of E. line.....	1934	618	545	Salina....	412 460	Clinton... Grimsby.	22	90	73	Fresh water at 81 ft., rises 50 ft. Sulphur water at 200 ft., rises 30 ft.
14	1	Dominion Natural Gas Co.... Brooks No. 1	5,300 ft. S. of N. line..... 1,400 ft. E. of W. line.....	.....	617	.....	Salina....	.....	.....	.....	.....	.....	
14	1	Brooks No. 2	4,000 ft. S. of N. line..... 1,200 ft. E. of W. line.	.....	615	.....	Salina....	.....	.....	.....	.....	.....	
14	1	Mohawk Gas Co..... Brooks No. 3	2,500 ft. S. of N. line..... 900 ft. E. of W. line.....	1931	620	619	Salina....	463 554	Grimsby. Whirlpool	5 20	155	64	Sulphur water at 70 ft., rises 33 ft.
14	1	Brooks No. 4	1,500 ft. S. of N. line..... 1,200 ft. W. of E. line.....	1931	618	612	Salina....	446 541	Grimsby. Whirlpool	20 15	115	61	Sulphur water at 68 ft., rises 36 ft.
15	1	Mohawk Gas Co..... A. Moyer No. 1	1,400 ft. S. of N. line..... 1,250 ft. W. of E. line.	1931	618	611	Salina....	544	Whirlpool	25	180	86	Sulphur water at 87 ft., rises 40 ft.
15	1	A. Moyer No. 2	500 ft. S. of N. line..... 1,000 ft. W. of E. line.	1931	624	586	Salina....	542	Whirlpool	15	190	67	Dark water at 80 ft., rises 44 ft.
16	1	United Gas Co..... Ricker No. 1	800 ft. W. of E. line on north line.....	1922	626	540	Salina....	443 525	Grimsby. Whirlpool	10 8	.....	56	
16	1	Dominion Natural Gas Co.... McKillop No. 1	.....	1922	.....	565	Salina....	419 544	Clinton... Grimsby Whirlpool	43	228	67	
16	1	McKillop No. 5	900 ft. E. of W. line on north line.	1922	618	567	Salina....	429 512	Grimsby. Whirlpool	17 20	180	67	
17	1	McKillop No. 6	2,300 ft. S. of N. line..... 400 ft. W. of E. line.....	1922	631	575	Salina....	411 522	Clinton... Grimsby. Whirlpool	20 8 24	60	70	

Wells in Canborough Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
18	1	Dominion Natural Gas Co. ... Scott No. 1	3,950 ft. S. of N. line..... 100 ft. E. of W. road.	1931	611	573	Salina....	.....	.....	37	.....	50	Abandoned.
6	2	Lincoln Gas Co.....	200 ft. W. of E. road..... 100 ft. S. of N. road.	1932	578	600	Salina....	.....	.....	17	100	73	Fresh water at 90 ft., rises 20 ft.
9	2	Ben Natural Gas Co..... S. Bartlett No. 1.....	100 ft. S. of N. road..... 200 ft. E. of W. line.....	....	 591	 587	..... Salina....	460 567	Clinton... Whirlpool	20	90	73	Fresh water at 76 ft.
9	2	S. Bartlett No. 2.....	1,200 ft. S. of N. road..... 100 ft. E. of W. line.	1935	589	584	Salina....	564	Whirlpool	20	100	58	Fresh water at 62 ft.
9	2	Ben Natural Gas Co..... Audrey Swayze No. 1.....	2,600 ft. S. of N. road..... 100 ft. W. of E. road.	1933	590	565	Salina....	.....	.....	Dry hole.	.....	77	Fresh water at 78 ft., rises 58 ft.; salt water at 215 ft.
9	2	Audrey Swayze No. 2.....	1,400 ft. S. of N. road..... 200 ft. W. of E. road.	1933	593	580	Salina....	.....	.....	Dry hole.	.....	71	Fresh water at 80 ft., rises 60 ft.; salt water at 215 ft.
9	2	Ben Natural Gas Co..... Audrey Swayze No. 3.....	100 ft. S. of N. road..... 100 ft. W. of E. road.	1933	590	582	Salina....	.....	.....	20	115	65	Fresh water at 110 ft., rises 85 ft.
9	2	Ben Natural Gas Co..... Arthur Swayze No. 1.....	500 ft. S. of N. road..... 1,100 ft. E. of W. line.....	1935	584	560	Salina....	490 555	Grimsby. Whirlpool	5 10	95	61	Fresh water at 64 ft., rises 20 ft.
9	2	Dominion Natural Gas Co.... F. Ricker No. 1.....	500 ft. S. of C.N. Rys... 900 ft. W. of E. road.....	1922	590	673	Salina....	500 613	Clinton... Red Medina Whirlpool	5 7 22	.....	93	
9	2	L. Ricker No. 1.....	1,600 ft. W. of E. road.... 300 ft. S. of M.C. Ry....	1922	591	672	Salina....	531 616	Grimsby. Whirlpool	50 18	.....	94	
9	2	A. Ricker No. 3.....	1,100 ft. S. of Talbot road 350 ft. E. of W. line.	.....	583	625	Salina....	.....	.....	22	120	46	Fresh water at 46 ft., rises 44 ft. Black water at 165 ft.
10	2	Dominion Natural Gas Co.... O'Keefe No. 1.....	100 ft. N. of S. road..... 100 ft. W. of E. line.	.....	587	653	Salina....	.....	.....	.....	.....	.....	

10	2	O'Keefe No. 2	100 ft. S. of M.C. Ry. 900 ft. W. of E. line.	.....	591	620	Salina	.....	.....	Dry hole.	.....	100		
10	2	Ben Natural Gas Co Mrs. Culvert No. 1	2,000 ft. S. of N. road 550 ft. W. of E. line	1935	594	583	Salina	420 550	Clinton Whirlpool	10 10	90	57		
11	2	Dominion Natural Gas Co Ecker No. 1	100 ft. N. of S. road 500 ft. W. of E. line.	.....	591	670	Salina	.....	.....	51	.....	98		
12	2	Egger and Sons	50 ft. N. of S. road 500 ft. E. of W. line.	.....	590	.....	Salina	.....	.....	.....	.....	.....		
13	2	May Gold and Natural Gas Syndicate Shaver No. 1	300 ft. N. of S. road 800 ft. E. of W. road	1934	584	598	Salina	465 558	Grimsby Whirlpool	7 11	100	62	Fresh water at 65 ft.	
13	2	Shaver No. 2	300 ft. S. of N. road 700 ft. E. of W. road	1934	588	593	Salina	503 541	Grimsby Whirlpool	10 12	100	72	Fresh water at 65 ft.	
13	2	Shaver No. 3	1,300 ft. S. of N. road 900 ft. W. of E. line	1934	592	625	Salina	498 590	Grimsby Whirlpool	12 12	100	80	Fresh water at 65 ft.	
13	2	Shaver No. 4	800 ft. N. of S. road 600 ft. W. of E. line.	1934	588	575	Salina	.....	.....	Dry hole.	.....	57	Fresh water at 65 ft.	
13	2	Shaver No. 5	50 ft. S. of N. road 600 ft. W. of E. line.	1934	575	598	Salina	557	Whirlpool	18	100	57	Fresh water at 68 ft.	
13	2	Shaver No. 6	700 ft. S. of N. road 100 ft. W. of E. line	1934	588	625	Salina	513 593	Grimsby Whirlpool	10 10	100	80	Fresh water at 82 ft.	
14	2	Seneca Gas Co Mrs. M. Shaver No. 1	700 ft. N. of S. line 1,400 ft. W. of E. road.	1934	586	646	Salina	.....	.....	22	108	59	Fresh water at 70 ft., rises 20 ft.	
14	2	Dominion Natural Gas Co Allison Shaver No. 4	1,000 ft. S. of N. road 900 ft. W. of E. road.	1916	589	638	Salina	.....	.....	.....	.....	54		
14	2	Seneca Gas Co Swick No. 1	900 ft. S. of N. road 1,000 ft. W. of E. line.	1934	598	626	Salina	.....	.....	15	110	63	Clear water at 67 ft., rises 30 ft. Sulphur water at 90 ft., rises 24 ft. Black water at 350 ft., rises 20 ft.	
14	2	Contact Natural Gas Syndicate Myers No. 1	750 ft. S. of N. road 700 ft. E. of W. road.	1932	594	632	Salina	.....	.....	21	125	52	Fresh water at 53 ft., rises 25 ft.	
14	2	Myers No. 2	1,500 ft. S. of N. road 700 ft. E. of W. road.	1934	595	647	Salina	.....	.....	30	110	62	Fresh water at 82 ft., rises 20 ft. Sulphur water at 240 ft.	
14	2	Myers No. 4	2,100 ft. N. of S. line 1,200 ft. E. of W. road	1934	575	624	Salina	.....	Clinton Grimsby	20	110	46	Fresh water at 37 ft., rises 2 ft. Sulphur water at 95 and 145 ft.	

Wells in Canborough Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
14	2	Seneca Gas Co..... Myers No. 3.	2,100 ft. N. of S. line on west boundary.	1934	593	630	Salina....	.....	Clinton...	14	108	39	Fresh water at 55 ft., rises 15 ft. Black water at 82 ft.
14	2	Myers No. 5.....	1,700 ft. E. of W. road..... 300 ft. S. of N. road.....	1934	574	607	Salina....	....	Clinton... Grimsby	12	110	39	Fresh water at 47 ft., rises 15 ft. Black water at 217 ft.
15	2	Dominion Natural Gas Co.... McCallum No. 1.....	800 ft. N. of S. road..... 100 ft. W. of E. line.	1930	575	598	Salina....	.....	.....	.....	.....	.....	Abandoned.
15	2	Burchell Gas Syndicate..... J. N. Allen No. 3.....	900 ft. S. of N. road..... 50 ft. W. of E. line.....	1935	606	625	Salina....	466 496 588	Clinton... Red Medina Whirlpool	5 10 5	125	55	Fresh water at 57 ft., rises 38 ft. Black water at 320 ft.
15	2	J. N. Allen No. 4.....	100 ft. S. of N. road..... 300 ft. W. of E. line.....	1935	592	615	Salina....	491 575	Grimsby. Whirlpool	20	125	41	Fresh water at 70 ft., rises 50 ft. Black water at 350 ft.
16	2	J. N. Allen No. 1.....	350 ft. N. of S. road..... 600 ft. W. of E. line.	1935	582	604	Salina....	.....	.....	35	125	36	Fresh water at 36 ft., rises 29 ft. Black water at 158 ft.
16	2	Burchell Gas Syndicate..... J. N. Allen No. 2.....	1,300 ft. N. of S. road..... 100 ft. W. of E. line.	1935	594	608	Salina....	.....	.....	15	125	40	Fresh water at 45 ft., rises 27 ft.
16	2	J. N. Allen No. 3.....	1,000 ft. S. of N. road on east line.	1931	598	669	Salina....	.....	.....	.....	.....	.....	Abandoned.
16	2	Dominion Natural Gas Co.... Alvin Swayze.....	300 ft. S. of N. road..... 500 ft. E. of W. line.	.....	605	.....	Salina....	.....	.....	.....	.....	.....	Abandoned.
1	3	Selected Gas Syndicate..... Bethel United Church.....	100 ft. N. of Dunnville road. 4,000 ft. W. of Indian Reserve.	 1932	 599	 758	..... Salina....	583 701	Clinton... Whirlpool	10	210	72	Fresh water at 30 ft., rises 10 ft. Black water at 400 ft.
1	3	Selected Gas Syndicate..... Teeft No. 4.....	1,800 ft. NE. of Dunnville road. 3,800 ft. NW. of Indian Reserve.	 1932	 595	 751	..... Salina....	565 690	Clinton... Whirlpool..	30	200	78	Fresh water at 100 ft., rises 75 ft. Black water at 330 ft.

1	3	Teeft No. 5	2,800 ft. N. of Dunnville road. 4,000 ft. W. of Indian Reserve.	1932	596	744	Salina	560 702	Clinton... Whirlpool	5	180	54	Fresh water at 59 ft., rises 39 ft. Black water at 323 ft., rises 291 ft.
1	3	Ontario Counties Gas Co..... Miller No. 1	900 ft. E. of Dunnville road. 4,300 ft. W. of Indian Reserve.	1931	594	754	Salina	562 628 697	Clinton... Grimsby Whirlpool	35	230	75	Fresh water at 73 ft. Black water at 126 ft.
1	3	Ontario Counties Gas Co..... Hartlett No. 1	100 ft. E. of Dunnville road. 900 ft. S. of road forks	1931	594	753	Salina	602 697	Grimsby. Whirlpool	35	230	76	Fresh water at 78 ft. Black water at 220 ft.
1	3	Ontario Counties Gas Co..... Mrs. Jas. McDonald No. 1	200 ft. E. of Dunnville road. 2,100 ft. S. of road forks	1931	596	771	Salina	578 618 712	Clinton... Grimsby. Whirlpool	25	230	65	Fresh water at 62 ft. Black water at 110 ft.
1	3	Colonial Gas Co..... Emrick No. 1	950 ft. W. of E. road..... 300 ft. S. of N. line	1933	587	735	Salina	600 675	Grimsby Whirlpool	22	200	80	Fresh water at 80 ft., rises 10 ft.
1	3	Emrick No. 2	100 ft. S. of N. line..... 2,500 ft. W. of E. road	1933	596	738	Salina	615 670	Grimsby. Whirlpool	15	200	50	Fresh water at 50 ft., rises 10 ft.
1	3	Ontario Counties Gas Co..... Keely No. 1	1,250 ft. S. of Dunnville road. 2,000 ft. E. of road forks	1931	596	770	Salina	698	Whirlpool	13	230	77	Fresh water at 96 ft. Black water at 160 ft.
1	Indian Reserve	Sunday Gas Wells..... M. Sunday	800 ft. W. of Robinson road. 325 ft. N. of C.N. Rys.	1937	586	716	Salina			33	200	85	
2	3	Dominion Natural Gas..... Ostrander No. 1	50 ft. N. of S. line..... 100 ft. W. of E. road.		588	700	Salina						
3	3	Colonial Natural Gas Co.....	2,100 ft. W. of E. road. 300 ft. S. of N. line.....		593	729	Salina	566	Clinton...	25	200	58	Fresh water at 53 ft., rises 43 ft.
4	3	Dominion Natural Gas Co.... Clifford No. 1	700 ft. S. of N. line..... 2,900 ft. W. of E. road		593	728	Salina		Grimsby. Whirlpool	70			
4	3	Clifford No. 2	300 ft. N. of S. line..... 4,300 ft. W. of E. road		594	723	Salina		Grimsby. Whirlpool	75			
5	3	Dominion Natural Gas Co.... D. VanKuren No. 1	600 ft. S. of N. road..... 2,400 ft. W. of E. road		594	716	Salina		Clinton... Grimsby Whirlpool	64			
5	3	C. VanKuren	600 ft. S. of N. road..... 1,100 ft. W. of E. road	1920	592	724	Salina		Clinton... Whirlpool	21			

Wells in Canborough Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
5	3	Associated Gas Co.....	500 ft. S. of N. line.....	1933	602	710	Salina....	521	Grimsby	45	175	49	Fresh water at 60 ft.
		Baker No. 1.....	900 ft. E. of Dunnville road.	.....	.....	.....	.....	655	Whirlpool	.....	.....	.....	Sulphur water at 235 ft.
5	3	Baker No. 2.....	450 ft. S. of N. line.....	1933	601	703	Salina....	554	Grimsby.	30	235	54	Fresh water at 60 ft.
			800 ft. E. of Dunnville road.	.....	.....	.....	.....	656	Whirlpool	13	.....	.....	Sulphur water at 230 ft.
5	3	Baker No. 3.....	500 ft. S. of N. line.....	1934	603	703	Salina....	.....	Clinton...	50	105	45	Fresh water at 46 ft., rises 30 ft.
			2,100 ft. E. of Dunnville road.	.....	.....	.....	.....	.....	Grimsby				
									Whirlpool				Black water at 360 ft.
5	3	D. Glenny No. 2.....	50 ft. S. of N. line.....	1932	602	731	Salina....	577	Grimsby.	19	175	50	
			1,600 ft. E. of Dunnville road.	.....	.....	.....	.....	664	Whirlpool	23			
5	3	D. Glenny No. 3.....	100 ft. S. of N. line.....										
			3,400 ft. E. of Dunnville road.	1932	599	722	Salina....	656	Whirlpool	19	155	58	
5	3	D. Glenny No. 4.....	4,700 ft. E. of No. 3 highway.	1937	603	675	Salina....	.....	.....	Dry hole	.....	58	
			350 ft. N. of S. line.										
5	3	Dominion Natural Gas Co....	100 ft. N. of S. line.....	1920	593	711	Salina....	.....	Grimsby.	45	.....	.....	
		W. Crumb No. 1.....	3,800 ft. W. of E. road.....	.....	.....	.....	.....	.....	Whirlpool				
5	3	W. Crumb No. 2.....	50 ft. S. of N. line.....	1920	590	698	Salina....	.....	Grimsby.	68	.....	.....	
			1,600 ft. W. of E. road.....	.....	.....	.....	.....	.....	Whirlpool				
5	3	E. Crumb No. 1.....	.....	1920	.....	711	Salina....	.....	Grimsby.	67	.....	.....	
6	3	Dominion Natural Gas Co....	500 ft. N. of S. road.....	1920	591	709	Salina....	.....	Clinton...	157	.....	.....	
		Crosby No. 1.....	100 ft. W. of E. road.....	.....	.....	.....	.....	.....	Whirlpool				
6	3	Crosby No. 2.....	100 ft. S. of N. road.....	1919	596	710	Salina....	.....	.....	157	.....	56	
			3,200 ft. W. of E. road.										
6	3	Crosby No. 3.....	100 ft. S. of N. road.....	1920	591	698	Salina....	.....	Clinton...	25			
			1,600 ft. W. of E. road.....	.....	.....	.....	.....	.....	Grimsby.	55			
									Whirlpool	25			

6	3	Dochstader No. 1	100 ft. S. of N. line 250 ft. W. of E. road		588	713	Salina		Clinton Grimsby Whirlpool				
6	3	Hartnett No. 1	100 ft. S. of N. road 6,100 ft. E. of W. road	1919	591	692	Salina		Grimsby Whirlpool	37		75	
6	3	Daniel Glenny Hartnett No. 2	100 ft. S. of N. road 6,700 ft. W. of E. road	1933	593	715	Salina	547 646	Clinton Whirlpool	13 12	132	83	Sulphur water at 84ft.
6	3	Daniel Glenny Wallace No. 1	100 ft. S. of N. road 5,300 ft. W. of E. road	1933	592	681	Salina	560 645	Grimsby Whirlpool	7 2	138	58	Sulphur water at 60 ft.
6	3	Daniel Glenny No. 1	1,000 ft. S. of N. road 200 ft. E. of W. road.	1932	602	616	Salina			Dry hole		57	Fresh water at 59 ft.
6	3	Daniel Glenny No. 4	700 ft. S. of N. road 4,500 ft. E. of W. road	1932	595	710	Salina	559 642	Clinton Whirlpool	11 6	165	56	
6	3	McKechnie and Hussey L. Glenny No. 1	500 ft. S. of N. road 3,000 ft. E. of W. road.	1932	602	708	Salina			21	150	48	Fresh water at 60 ft., rises 40 ft.
6	3	L. Glenny No. 2	200 ft. S. of N. road 2,000 ft. E. of W. road.	1932	602	701	Salina			27	155	56	Fresh water at 60 ft., rises 40 ft.
6	3	L. Glenny No. 3	400 ft. S. of N. road 900 ft. E. of W. road.	1933	597	701	Salina			15	110	56	Fresh water at 60 ft., rises 30 ft.
7	3	Dominion Natural Gas Co W. Ricker No. 1	300 ft. S. of N. line 100 ft. W. of E. road	1919	591	675	Salina		Clinton Grimsby Whirlpool	48		64	Black water at 230 ft.
7	3	Kipling No. 1	400 ft. N. of S. road 4,700 ft. E. of W. road.	1919	594	696	Salina		Whirlpool	57			
7	3	Miles No. 1	100 ft. N. of S. road 1,700 ft. E. of W. road	1922	597	676	Salina	546 634	Grimsby Whirlpool	20 17	185	57	
8	3	Mellick No. 1	1,500 ft. S. of N. road 5,500 ft. W. of E. road	1919	585	656	Salina		Grimsby Whirlpool	17 17			
8	3	Mellick No. 2	100 ft. S. of N. road 3,100 ft. W. of E. road	1919	592	683	Salina		Clinton Whirlpool	28			
8	3	Jas. Allen No. 1	2,300 ft. S. of N. road 5,200 ft. E. of W. road.	1919	592	682	Salina		Red Medina.	62			
8	3	Baldwin No. 1	200 ft. N. of S. line 1,500 ft. W. of E. road	1919	587	702	Salina	520 640	Clinton Whirlpool	86			
8	3	Mrs. Ricker No. 1	100 ft. S. line 100 ft. W. of E. road	1919	588	712	Salina		Grimsby Whirlpool	24		66	

Wells in Canborough Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
8	3	Barker No. 1	100 ft. S. of N. road 1,200 ft. W. of E. road.	1919	592	636	Salina			96			
9	3	Barker No. 1	600 ft. S. of N. road 400 ft. W. of E. road.		585	679	Salina		Clinton Grimsby Whirlpool	65			
9	3	Dominion Natural Gas Co. E. Warren No. 1	600 ft. S. of N. line 4,000 ft. E. of W. road.	1922	592	630	Salina			Dry hole		87	
9	3	H. Farr	800 ft. S. of N. line 4,600 ft. E. of W. road	1919	589	693	Salina		Clinton Grimsby Whirlpool	51			
9	3	Jas. Warren No. 1	50 ft. S. of N. line 1,700 ft. E. of W. road.		584	656	Salina						
9	3	H. A. Bradford	100 ft. S. of N. line 100 ft. W. of E. road	1920	590	675	Salina		Grimsby Whirlpool	97		90	
10	3	Darling Road Syndicate Jacob Ricker No. 17	100 ft. N. of M.C. Ry 5,300 ft. W. of Dunnville road.	1923	598	688	Salina			67	245	52	
10	3	Jacob Ricker No. 18	750 ft. S. of N. line 700 ft. E. of W. line	1923	601	688	Salina		Clinton Grimsby Whirlpool	300	260	53	
10	3	Jacob Ricker No. 19	100 ft. N. of M.C. Ry 4,100 ft. W. of E. road	1923	588	688	Salina		Clinton Grimsby.	20 8	223	54	
10	3	Jacob Ricker No. 20	100 ft. N. of M.C. Ry 2,900 ft. W. of Dunnville road.	1923	596	685	Salina	503 554	Clinton Grimsby.	15 22	219	52	
13	3	W. J. Bouk No. 15	300 ft. S. of N. line 500 ft. W. of E. road.	1924	590	685	Salina			25	190	53	
13	3	P. Misener No. 16	600 ft. N. of M.C. Ry 2,100 ft. E. of W. road.	1924	595	684	Salina			15		52	

13	3	Dominion Natural Gas Co.... W. Mellick No. 1.....	50 ft. S. of N. line..... 100 ft. W. of E. road.	.....	583	648	Salina....	.....	.....	.....	.....	.....	
4	Clement Tract	W. J. Aikens..... Clifford No. 1.....	200 ft. N. of S. road..... 1,100 ft. E. of W. road.....	1931	598	708	Salina....	540 654	Clinton... Whirlpool	60	190	67	Fresh water at 67 ft. Salt water at 300 ft.
5	"	Aikens Gas Syndicate..... J. Mimno No. 1.....	100 ft. E. of W. road..... 2,100 ft. N. of S. road.....	1932	602	705	Salina....	530 647	Clinton... Whirlpool	140	250	64	Fresh water at 60 ft., rises 30 ft. Salt water at 275 ft.
5	"	J. Mimno No. 2.....	2,400 ft. N. of S. road..... 700 ft. E. of W. road.	1932	601	653	Salina....	.....	.....	.....	.....	63	Fresh water at 65 ft. Salt water at 275 ft.
6	"	Clifford No. 2.....	300 ft. S. of C.N. Rys... 4,000 ft. W. of E. road.....	1932	601	700	Salina....	512 644	Clinton... Whirlpool	15	205	59	Fresh water at 55 ft., rises 20 ft. Salt water at 275 ft.
7	"	W. Bowens No. 1.....	1,100 ft. N. of S. road..... 100 ft. W. of E. road.....	1931	603	706	Salina....	535 653	Clinton... Whirlpool	68	205	59	Fresh water at 70 ft. Salt water at 300 ft.
7	"	W. Bowens No. 2.....	100 ft. S. of C.N. Rys... 600 ft. W. of E. road.....	1932	600	646	Salina....	512 554	Clinton... Grimsby	33	240	52	Fresh water at 60 ft., rises 20 ft. Salt water at 225 ft.
7	"	J. E. Tapp No. 1.....	1,700 ft. N. of S. road..... 1,000 ft. W. of E. road.....	1931	603	701	Salina....	535 646	Clinton... Whirlpool	68	225	59	Fresh water at 75 ft. Salt water at 300 ft.
8	"	J. E. Tapp No. 2.....	900 ft. S. of C.N. Rys... 1,900 ft. W. of E. road.	1931	603	649	Salina....	529	Clinton...	30	250	62	Fresh water at 70 ft. Salt water at 300 ft.
8	"	J. E. Tapp No. 3.....	1,500 ft. N. of S. road..... 1,800 ft. W. of E. road.....	1931	601	700	Salina....	540 649	Clinton... Whirlpool	95	200	60	Fresh water at 60 ft. Salt water at 300 ft.
8	"	J. E. Tapp No. 4.....	50 ft. W. of E. line..... 1,200 ft. N. of S. road.....	1931	603	706	Salina....	542 650	Clinton... Whirlpool	87	230	61	Fresh water at 60 ft. Salt water at 300 ft.
8	"	J. E. Tapp No. 5.....	350 ft. N. of S. road..... 1,200 ft. W. of E. road.....	1931	603	711	Salina....	525 624	Clinton... Whirlpool	87	200	47	Fresh water at 45 and 60 ft. Salt water at 300 ft.
9	"	Aikens Gas Syndicate..... Audrey Sutor No. 1.....	100 ft. N. of S. road..... 50 ft. W. of E. line.....	1932	605	668	Salina....	521 654	Clinton... Whirlpool	37	250	58	Fresh water at 57 ft., rises 35 ft. Salt water at 300 ft.
10	"	Audrey Sutor No. 3.....	850 ft. N. of S. road..... 700 ft. W. of E. line.....	1932	604	704	Salina....	515 651	Clinton... Whirlpool	37	190	59	Fresh water at 85 ft., rises 40 ft. Salt water at 305 ft.
12	"	Miss Ortt No. 1.....	100 ft. S. of N. road..... 250 ft. E. of W. road.....	1932	607	723	Salina....	530 657	Clinton... Whirlpool	105	220	65	Fresh water at 115 ft., rises 75 ft. Salt water at 275 ft.
12	"	Miss Ortt No. 2.....	1,000 ft. S. of N. road..... 100 ft. E. of W. road.....	1932	604	728	Salina....	533 657	Clinton... Whirlpool	76	180	54	Fresh water at 80 ft., rises 25 ft. Salt water at 300 ft.

Wells in Canborough Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
12	"	Aikens Gas Syndicate..... Miss Ortt No. 3.....	700 ft. S. of N. road..... 700 ft. E. of W. road.....	1932	605	724	Salina....	528 661	Clinton... Whirlpool	82	180	62	Fresh water at 65 ft., rises 20 ft. Salt water at 300 ft.
12	"	Miss Ortt No. 4.....	1,300 ft. S. of N. road..... 700 ft. E. of W. road.....	1932	602	713	Salina....	531 661	Clinton... Whirlpool	30	220	66	Fresh water at 75 ft., rises 20 ft. Salt water at 300 ft.
13	"	Aikens Gas Syndicate..... E. Harnett No. 1.....	200 ft. S. of N. road..... 100 ft. W. of E. line.....	1932	605	724	Salina....	525 657	Clinton... Whirlpool	82	200	50	Fresh water at 48 ft., rises 25 ft. Salt water at 285 ft.
13	"	E. Hartnett No. 2.....	700 ft. S. of N. road..... 600 ft. W. of E. line.....	1932	605	715	Salina....	525 659	Clinton... Whirlpool	76	200	60	Fresh water at 55 ft., rises 30 ft. Salt water at 285 ft.
13	"	E. Hartnett No. 3.....	100 ft. S. of N. road..... 150 ft. E. of W. line.....	1932	604	707	Salina....	567 656	Grimsby. Whirlpool	55	220	60	Fresh water at 61 ft., rises 35 ft. Salt water at 275 ft.
14	"	Aikens Gas Syndicate..... Audrey Sutor No. 2.....	1,000 ft. S. of N. road..... 600 ft. W. of E. line.....	1932	604	724	Salina....	530 665	Clinton... Whirlpool	30	185	58	Fresh water at 65 ft., rises 20 ft. Salt water at 285 ft.
16	"	Aikens Gas Syndicate..... David Barry No. 1.....	800 ft. S. of N. road..... 200 ft. E. of W. line.....	1932	605	729	Salina....	558 670	Clinton... Whirlpool	82	185	51	Fresh water at 50 ft., rises 25 ft. Salt water at 300 ft.
16	"	David Barry No. 2.....	1,550 ft. S. of N. road..... 5,200 ft. W. of Dunnville road.	1932	604	698	Salina....	536 669	Clinton... Whirlpool	42	242	59	Fresh water at 60 ft., rises 35 ft. Salt water at 300 ft.
16	"	David Barry No. 3.....	100 ft. S. of N. road..... 100 ft. W. of E. line.	1918	602	.....	Salina....	.....	.....	.....	.....	.....	
1	Dochstader Tract	Dominion Natural Gas Co.... A. Wildfang No. 1.....	100 ft. N. of S. road..... 100 ft. W. of E. road.	1925	597	708	Salina....	.....	.....	Dry hole	.....	65	Flowing spring at 65 ft. Sulphur water at 300 ft.

6	"	Dominion Natural Gas Co....	200 ft. N. of S. road.....	1926	588	706	Salina....	.....	.....	Dry hole	.....	105	Fresh water at 60 ft., rises 20 ft.
		Jno. Keeley No. 1.....	100 ft. W. of E. line.										Black water at 290 ft.
9	"	Selected Gas Syndicate.....	100 ft. N. of T.H. and B. Ry.	1932	601	759	Salina....	573	Clinton...	30	230	68	Fresh water at 53 ft., rises 25 ft.
		Shepherd No. 1.....	100 ft. W. of E. road.....	.....	.....	.....	.....	697	Whirlpool				Black water at 400 ft., rises 375 ft.
9	"	Shepherd No. 2.....	600 ft. S. of Dunnville road	1932	606	753	Salina....	571	Clinton...	20	230	70	Fresh water at 60 ft.
			1,700 ft. E. of W. road.....	.....	.....	.....	.....	628	Grimsby				Black water at 440 ft.
9	"	Shepherd No. 3.....	500 ft. S. of Dunnville road	1932	586	719	Salina....	.....	.....	15	150	50	Fresh water at 60 ft., rises 18 ft.
			100 ft. W. of E. road.										Salt water at 480 ft.
8	"	W. E. Coate.....	250 ft. S. of N. road.....	1936	596	707	Salina....	577	.....	19	205	66	Sulphur water at 70 ft.
		E. Lymburner No. 1.....	700 ft. W. of highway...	.....	.....	.....	.....	700	Whirlpool				
8	"	W. E. Coate.....	200 ft. S. of N. road.....	1937	595	760	Salina....	607	Grimsby.	20	250	80	Sulphur water at 83 ft.
		C. S. Weaver No. 1.....	1,900 ft. W. of highway...	.....	.....	.....	.....	701	Whirlpool				
8	"	W. E. Coate.....	200 ft. S. of N. road.....	1937	593	700	Salina....	599	Grimsby.	23	300	112	Sulphur water at 110 ft.
		C. S. Weaver No. 2.....	3,200 ft. W. of highway...	.....	.....	.....	.....	607					

Wells in Dunn Township, Haldimand County

3	1 N	W. C. Patterson.....	100 ft. S. of N. road.....	1927	609	831	Onondaga	644	Clinton...	50	335	63	
		Anderson No. 1.....	200 ft. W. of E. line.										
3	1 N	W. C. Patterson.....	1,300 ft. S. of N. road.....	1927	614	789	Onondaga	.....	.....	Dry hole	.....	64	
		Anderson No. 2.....	100 ft. W. of E. line.										
3	1 N	W. C. Patterson.....	200 ft. N. of S. road.....	1929	632	850	Onondaga	.....	.....	Dry hole	.....	35	
		Hoover No. 1.....	200 ft. W. of E. line.										
6	1 N	Dominion Natural Gas Co....	1,600 ft. S. of N. road.....	1917	595	764	Onondaga	.....	.....	.....	.....	74	Casing pulled.
		Franklin No. 1.....	100 ft. W. of E. road.										
6	1 N	Union Gas Co.....	400 ft. S. of N. road.....	1930	598	781	Onondaga	622	Clinton...	60	175	86	
		Franklin No. 137.....	750 ft. W. of E. road.....	.....	.....	.....	.....	746	Whirlpool				
6	1 N	Union Gas Co.....	1,500 ft. S. of N. road.....	1930	597	765	Onondaga	650	Clinton...	40	240	79	
		Franklin No. 138.....	100 ft. E. of W. line.										
9	1 N	Union Gas Co. No. 233.....	50 ft. N. of S. road.....	1939	617	812	Onondaga	680	Clinton...	½	.....	23	
		A. W. Hanna.....	50 ft. W. of E. line.										
13	1 N	W. C. Patterson.....	400 ft. N. of S. road.....	1933	583	796	Onondaga	.....	.....	27	325	55	Fresh water at 55 ft.
		Secord No. 1.....	100 ft. E. of W. road.										Sulphur water at 340 ft.

Wells in Dunn Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. sq. in.	Thickness of drift in feet	Remarks
13	1 N	W. C. Patterson..... Secord No. 2.....	1,150 ft. N. of S. road..... 300 ft. E. of W. road.	1933	588	827	Onondaga	.....	.....	112	325	76	Fresh water at 74 ft. Sulphur water at 375 ft.
13-14	1 N	Western Ontario Gas Co..... Aikens No. 1.	300 ft. W. of road forks..	1933	599	803	Onondaga	.....	.....	Dry hole	.....	62	Fresh water at 65 ft. Salt water at 450 ft.
13-14	1 N	Aikens No. 2.....	100 ft. N. of S. road..... 1,000 ft. E. of W. road.	1933	606	829	Onondaga	.....	.....	17	260	70	Fresh water at 60 and 95 ft. Salt water at 450 ft.
13-14	1 N	Aikens No. 3.....	1,000 ft. N. of S. road..... 800 ft. E. of W. road.	1933	593	834	Onondaga	.....	.....	192	315	83	Fresh water at 90 ft. Salt water at 450 ft.
13-14	1 N	Aikens No. 4.....	1,200 ft. N. of S. road..... 1,500 ft. E. of W. road.	1933	584	830	Onondaga	.....	.....	131	290	72	Fresh water at 73 ft. Salt water at 450 ft.
13-14	1 N	Aikens No. 5.....	350 ft. N. of S. road..... 800 ft. E. of W. road.	1933	594	822	Onondaga	.....	.....	70	290	76	Fresh water at 76 ft. Salt water at 450 ft.
13-14	1 N	Aikens No. 6.....	1,400 ft. N. of S. road..... 700 ft. E. of W. road.	1933	578	818	Onondaga	.....	.....	270	290	78	Fresh water at 80 ft. Salt water at 450 ft.
13-14	1 N	Aikens No. 7.....	2,000 ft. N. of S. road..... 700 ft. E. of W. road.	1933	585	818	Onondaga	.....	.....	39	250	87	Fresh water at 112 ft. Salt water at 450 ft.
13-14	1 N	Aikens No. 8.....	1,500 ft. N. of S. road..... 1,200 ft. E. of W. road.	1933	587	815	Onondaga	.....	.....	170	175	80	Fresh water at 80 ft. Salt water at 450 ft.
13-14	1 N	Aikens No. 9.....	1,200 ft. N. of S. road..... 1,900 ft. W. of E. road.	1933	582	767	Onondaga	.....	.....	Dry hole	.....	78	Fresh water at 80 ft. Salt water at 586 ft.
17	1 N	Dunn Natural Gas Co..... W. Rowe No. 1.....	700 ft. N. of S. road..... 200 ft. E. of W. road.	1933	575	820	Onondaga	751	Whirlpool	38	175	54	Fresh water at 40 ft. Salt water at 450 ft.
17	1 N	Aikens Gas Syndicate..... W. Rowe No. 2.....	1,100 ft. N. of S. road..... 700 ft. E. of W. road.	1933	575	815	Onondaga	621	Clinton...	112	380	60	
17	1 N	Western Ontario Gas Co..... W. Rowe No. 3.....	1,100 ft. E. of W. road..... 1,600 ft. N. of S. road.	1933	574	818	Onondaga	.....	.....	42	250	66	

7	1 S	W. C. Patterson..... Murdoch No. 1.....	450 ft. S. of N. road..... 600 ft. E. of W. road.....	932	636	883	Onondaga	743 832	Grimsby. Whirlpool	100	370	23	Fresh water at 51 ft.
7	1 S	Murdoch No. 2.....	1,500 ft. S. of N. road..... 500 ft. E. of W. road.	1933	629	843	Onondaga	.....	.....	Dry hole	.....	24	Fresh water at 60 ft. Sulphur water at 465 ft.
7	1 S	Murdoch No. 3.....	3,600 ft. S. of N. road..... 750 ft. E. of W. road.	1933	625	888	Onondaga	.....	.....	60	415	29	Fresh water at 30 ft. Sulphur water at 450 ft.
8	1 S	W. C. Patterson..... Ramsay No. 1.....	100 ft. N. of S. line..... 500 ft. E. of W. line.	1933	622	850	Onondaga	.....	.....	Dry hole	.....	30	Fresh water at 35 ft. Sulphur water at 445 ft.
8	1 S	Ramsay No. 3.....	650 ft. N. of S. line..... 500 ft. E. of W. line.	1933	620	892	Onandaga	.....	.....	112	415	32	Fresh water at 35 ft. Sulphur water at 440 ft.
8	1 S	W. C. Patterson..... Mrs. Wardell No. 1.....	1,250 ft. S. of N. road..... 150 ft. E. of W. line.	1933	626	862	Onondaga	.....	.....	65	415	22	Fresh water at 22 ft. Sulphur water at 400 ft.
8	1 S	Mrs. Wardell No. 2.....	800 ft. S. of N. road..... 300 ft. W. of E. line.....	1934	623	831	Onondaga	687 724	Clinton... Whirlpool	55	380	21	
9	1 S	W. C. Patterson..... Ramsay No. 4.....	400 ft. N. of S. line..... 150 ft. E. of W. line.	1933	620	845	Onondaga	.....	.....	Dry hole	.....	30	Fresh water at 40 ft. Sulphur water at 190 ft.
8	2 S	Ramsay No. 2.....	550 ft. N. of S. road..... 500 ft. E. of W. road.	1933	622	852	Onondaga	.....	.....	Dry hole	.....	32	Fresh water at 35 ft. Sulphur water at 440 ft.
11	3 S	Dominion Natural Gas Co.... Dickson No. 1.....	100 ft. N. of S. line..... 600 ft. E. of W. line.	1929	619	880	Onondaga	.....	.....	Dry hole	.....	22	Fresh water at 33 ft. Black water at 450 ft.
12	3 S	Dunn Natural Gas Co..... Marshall No. 1..,.....	200 ft. N. of S. road..... 150 ft. W. of E. road.	1912	617	937	Onondaga	740 860	Clinton... Whirlpool	50	270	22	
18	4 S	Dunn Natural Gas Co..... Hamilton.....	100 ft. N. of S. line..... 250 ft. W. of E. road.....	1912	623	823	Onondaga	776 800	Clinton... Grimsby	2,000	.....	14	
22	4-5 S	Dunn Natural Gas Co..... Splatt No. 1.....	200 ft. N. of Lake Erie.. 100 ft. E. of W. line.....	1912	600	922	Onondaga	785 867	Grimsby. Whirlpool	750	370	22	
22	4-5 S	Splatt No. 2.....	300 ft. N. of Lake Erie.. 500 ft. E. of W. line.....	1912	600	920	Onondaga	785 865	Grimsby. Whirlpool	1,000	350	20	
24	4 S	J. S. Jones..... Church of England No. 1....	300 ft. S. of N. road..... 600 ft. W. of E. road.....	1923	583	900	Onondaga	714 758	Clinton... Grimsby	30	100	24	
13	5 S	Dunn Natural Gas Co..... W. R. Dickout.....	2,800 ft. S. of N. line..... 700 ft. E. of W. road.	1936	578	.....	Onondaga	793	Grimsby.	40	250	.....	
14	5 S	Western Ontario Natural Gas. L. Grant No. 1.....	1,700 ft. N. of S. road..... 350 ft. E. of W. line.	1936	582	898	Onondaga	779	Grimsby.	25	245	.....	
1-2	Earl Tract	Western Ontario Natural Gas E. Johnson No. 1.	500 ft. S. of N. road on Grand River.	1933	585	818	Onondaga	.....	.....	17	205	50	Fresh water at 51 ft. Salt water at 450 ft.

Wells in Dunn Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
1-2	Earl Tract	E. Johnson No. 2	900 ft. N. of S. road..... 1,200 ft. E. of W. road.	1933	578	826	Onondaga	.....	.....	55	270	52	Fresh water at 50 ft. Salt water at 450 ft.
1-2	"	E. Johnson No. 3	400 ft. N. of S. road..... 1,000 ft. E. of W. road.	1933	583	840	Onondaga	.....	.....	50	270	51	Fresh water at 51 ft. Salt water at 450 ft.
4	"	Columbia Gas Co. Cowell No. 4.	500 ft. N .of S. road on Grand River.	1934	590	870	Onondaga	814	Whirlpool	19	305	65	
6	"	Western Ontario Gas Co..... H. Carter No. 1	100 ft. S. of NW. road... 100 ft. W. of E. road.	1933	596	824	Onondaga	.....	.....	12	210	48	Fresh water at 48 ft. Salt water at 475 ft.
1	2 N	W. C. Patterson..... Rittenhouse No. 1	1,200 ft. S. of N. line..... 100 ft. E. of W. road.	1925	595	743	Salina....	.....	.....	Dry hole	.....	80	
3	2 N	W. C. Patterson..... Hare No. 2	3,700 ft. N. of S. road..... 100 ft. E. of W. line.	1929	592	738	Salina....	.....	.....	Dry hole	.....	51	
3	2 N	W. C. Patterson..... Moote No. 1	800 ft. N. of S. road..... 600 ft. E. of W. line.....	.....	593	807	Salina....	616 672	Clinton... Grimsby	134	375	64	
3	2 N	Moote No. 2..... Union Gas Co. No. 123.....	2,000 ft. N. of S. road..... 600 ft. E. of W. line.....	1927	605	860	Salina....	667 752	Grimsby. Whirlpool	50	315	63	
4	2 N	W. C. Patterson..... Hare No. 1	1,700 ft. S. of N. road..... 250 ft. E. of W. line.	1925	596	765	Salina....	716	?	23	310	75	
4	2 N	Union Gas Co. No. 128..... Knight No. 1	2,800 ft. S. of N. road..... 400 ft. E. of W. line.	1925	602	807	Salina....	725	Whirlpool	50	320	77	
4	2 N	Union Gas Co. No. 129..... Ora Dickson No. 1	2,500 ft. S. of N. road..... 400 ft. W. of E. line.....	1925	595	795	Salina....	606 719	Clinton... Whirlpool	826	360	76	
4	2 N	Union Gas Co. No. 127..... Frank Dickson No. 1.....	600 ft. N. of S. road..... 650 ft. E. of W. line.....	.....	603	780	Salina....	622 675	Clinton... Grimsby	500	360	68	
5	2 N	Union Gas Co. No. 130..... Pettigrew.....	3,000 ft. N. of S. road..... 100 ft. E. of W. line.	1926	603	814	Salina....	.....	.....	.....	.....	80	
5	2 N	Union Gas No. 131..... Pettigrew.....	500 ft. N. of S. road..... 500 ft. E. of W. line.....	1927	603	815	Salina....	625 673	Clinton... Grimsby	150	350	78	

6	2 N	Union Gas Co. No. 134..... J. Dickson.....	100 ft. S. of N. road..... 300 ft. W. of E. road.	1926	595	812	Salina....	.....	.....	.....	.....	78	
6	2 N	W. C. Patterson..... J. Dickson No. 2.....	1,000 ft. N. of S. road..... 200 ft. W. of E. road.	1927	589	719	Salina....	.....	.....	Dry hole	.....	73	
6	2 N	W. C. Patterson..... Chas. Dickson No. 2.....	800 ft. N. of S. road..... 100 ft. E. of W. road.....	1927	604	878	Salina....	619 750	Clinton... Whirlpool	310	350	86	
6	2 N	Chas. Dickson No. 3..... Union Gas Co. No. 136.....	600 ft. N. of S. road..... 100 ft. W. of E. road.....	1927	603	876	Salina....	615 748	Clinton... Whirlpool	136	300	85	
1	3 N	Union Gas Co. No. 121..... Rittenhouse No. 3.....	100 ft. N. of S. road..... 700 ft. E. of W. road.....	1927	584	790	Salina....	590 620	Clinton... Grimsby	45	275	65	
2	3 N	Union Gas Co. No. 122..... Rittenhouse.....	500 ft. N. of S. road..... 500 ft. E. of W. line.	1926	595	780	Salina....	.....	.....	.....	.....	98	
4	3 N	Dominion Natural Gas Co.... J. Hauser No. 1.....	100 ft. N. of S. road..... 200 ft. W. of E. line.	1925	594	715	Salina....	596	Clinton...	25	280	77	
3	1 S	W. C. Patterson..... Finckbeiner No. 1.....	650 ft. S. of N. road..... 200 ft. W. of E. road.	1929	635	859	Onondaga	.....	.....	Dry hole	.....	34	
4	1 S	W. C. Patterson..... Hoover No. 1.....	2,250 ft. S. of N. road..... 100 ft. E. of W. line.	1929	631	861	Onondaga	.....	.....	Dry hole	.....	35	
5	1 S	W. C. Patterson..... Rowe No. 2.....	500 ft. S. of N. road..... 150 ft. W. of E. line.	1933	653	861	Onondaga	.....	.....	Dry hole	.....	8	Fresh water at 38 ft. Sulphur water at 400 ft.
6	1 S	Rowe No. 1.....	300 ft. S. of N. road..... 300 ft. W. of E. road.	1933	635	892	Onondaga	.....	.....	45	400	31	Fresh water at 60 ft. Sulphur water at 442 ft.
8	Earl Tract	Western Ontario Gas Co..... H. Hamilton No. 1.....	2,000 ft. N. of S. road..... 100 ft. W. of E. road.	1934	611	872	Onondaga	.....	Clinton...	40	370	19	Fresh water at 27 ft. Salt water at 500 ft.
8	"	H. Hamilton No. 2.....	1,200 ft. N. of S. road. 100 ft. W. of E. road.....	1934	609	874	Onondaga	.....	Clinton...	30	360	20	Fresh water at 25, 37, and 48 ft. Salt water at 500 ft.
8	"	H. Hamilton No. 3.....	750 ft. N. of S. road..... 100 ft. W. of E. road.	1934	606	905	Onondaga	.....	.....	30	150	42	Fresh water at 75 ft. Salt water at 500 ft.
9	"	H. Hamilton No. 4.....	100 ft. N. of S. road..... 100 ft. W. of E. road.....	1935	608	875	Onondaga	713 850	Clinton... Whirlpool	37	370	9	Fresh water at 75 ft. Salt water at 500 ft.
11	"	Dominion Natural Gas Co.... Cowell No. 1.....	700 ft. S. of N. road..... 1,200 ft. E. of W. road.	1930	608	.....	Onondaga	.....	.....	.....	.....	.....	Abandoned.
12	"	Columbia Gas Co..... Cowell No. 1.	100 ft. S. of N. road..... 2,150 ft. E. of W. road.....	1933	603	876	Onondaga	687 820	Clinton... Whirlpool	65	265	6	Fresh water at 55, 65, and 75 ft. Black water at 550 ft.

Wells in Dunn Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
12	Earl Tract	Cowell No. 2	800 ft. S. of N. road..... 2,100 ft. E. of W. road.....	1934	610	885	Onondaga	692 829	Clinton... Whirlpool	78	225	3	Sulphur water at 80 and 360 ft.
3	"	Cowell No. 3	950 ft. S. of N. road..... 3,150 ft. E. of W. road.....	.....	607	879	Onondaga	688 820	Clinton... Whirlpool	25	250	3	Sulphur water at 65 and 360 ft.
10	Sheehan Tract	W. C. Patterson..... H. Diette No. 1.....	500 ft. S. of N. road..... 100 ft. W. of E. road.	1934	588	810	Onondaga	.....	.....	Dry hole	.....	10	Fresh water at 40 ft. Sulphur water at 525 ft.
16	Earl Tract	Dominion Natural Gas Co.... Bowden No. 1.....	400 ft. E. of W. line..... 1,900 ft. N. of S. line.	1929	626	.....	Onondaga	.....	.....	.....	.....	.....	Abandoned.
14	Street Tract	F. and H. Roth..... Ezra Dickout.....	375 ft. W. of E. road..... 500 ft. S. of N. line.	1939	620	828	Onondaga	.....	.....	Dry hole	.....	14	Fresh water at 60 ft.

Wells in Moulton Township, Haldimand County

1	1-C	Wm. Spence No. 1.....	500 ft. S. of N. line..... 100 ft. W. of E. road.	1928	585	.....	Salina....	.....	.....	.....	.....	.....	
2	1-C	Colonial Natural Gas Syndicate.	100 ft. S. of N. line..... 750 ft. E. of W. road.	1932	590	742	Salina....	.....	.....	25	130	72	Sulphur water at 75 ft.
2	1-C	Colonial Natural Gas Syndicate No. 4.	500 ft. S. of N. line..... 2,500 ft. E. of W. road.....	1933	588	749	Salina....	592 699	Grimsby. Whirlpool	50	175	80	Fresh water at 80 ft.
3	1-C	Colonial Natural Gas Syndicate No. 2.	100 ft. N. of S. line..... 1,650 ft. E. of W. road.....	1933	588	758	Salina....	572 703	Clinton... Whirlpool	34	180	84	Fresh water at 86 ft. Sulphur water at 275 ft.
3	1-C	Selected Natural Gas Syndicate. Mitchener No. 1.....	50 ft. S. of N. line..... 400 ft. W. of E. road.....	1932	584	755	Salina....	572 653	Clinton... Grimsby	30	180	88	Freshwater at 90 ft. Black water at 490 ft.
3	1-C	Selected Natural Gas Syndicate. Mitchener No. 2.....	50 ft. S. of N. line..... 1,200 ft. W. of E. road.....	1933	583	759	Salina....	558 693	Clinton... Whirlpool	22	120	88	

3	1–C	Colonial Natural Gas Syndicate. David Mackay No. 3	700 ft. N. of S. line..... 2,500 ft. E. of W. road.....	1933	585	750	Salina....	566 684	Clinton... Whirlpool	65	190	89	Fresh water at 90 ft.
3	1–C	Colonial Natural Gas Syndicate. Stanley No. 1	50 ft. S. of N. line..... 2,500 ft. W. of E. road.....	1933	584	743	Salina....	553 679	Clinton... Whirlpool	28	180	88	Fresh water at 78 ft.
4	1–C	Colonial Natural Gas Syndicate. Alice Ross No. 1	400 ft. S. of N. road..... 1,900 ft. E. of W. road.....	1933	589	740	Salina....	551 679	Clinton... Whirlpool	25	180	78	Fresh water at 68 ft.
9	1–C	Dominion Natural Gas..... Bartlett and Theal No. 1....	850 ft. N. of S. line..... 2,100 ft. E. of W. road.....	1931	588	690	Salina....	559 691	Clinton... Whirlpool	26	152	53	Fresh water at 53 and 65 ft.
9	1–C	Lymburner Bros. and Webber	50 ft. S. of N. line..... 100 ft. W. of E. road.	1931	586	690	Salina....	.....	.....	15	155	65	Fresh water at 60 and 80 ft.
10	1–C	Lymburner Bros. and Webber.	600 ft. S. of N. line..... 1,000 ft. W. of E. road. ..	1931	589	700	Salina....	567 607	Clinton... Grimsby	16	250	61	
11	1–C	Lymburner Bros. and Webber. Hartnett No. 1	200 ft. S. of N. line..... 2,500 ft. E. of W. road.	1931	585	677	Salina....	.....	.....	Dry hole	.....	75	Fresh water at 70 and 90 ft.
11	1–C	Lymburner Bros. and Webber. Hartnett No. 2	100 ft. N. of S. line..... 2,100 ft. E. of W. road.....	1933	588	683	Salina....	541 593	Clinton... ?	15	90	80	
11	1–C	Lymburner Bros and Webber. Houser No. 1	100 ft. S. of N. line..... 800 ft. W. of E. road.....	1931	587	698	Salina....	564 598	Clinton... Grimsby	120	265	70	Fresh water at 70 and 100 ft.
11	1–C	Lymburner Bros. and Webber. Houser No. 2	600 ft. S. of N. line..... 1,000 ft. W. of E. road.	1931	591	668	Salina....	.....	.....	18	82	64	Fresh water at 65 and 80 ft.
17	1–C	Lincoln Gas Co..... Geo. Jones No. 1	50 ft. N. of S. road..... 1,700 ft. E. of W. road.	1933	585	594	Salina....	.....	.....	Dry hole	.....	91	
17	1–C	Lincoln Gas Co..... Geo. Jones No. 2	50 ft. N. of S. road..... 1,000 ft. E. of W. road.	1933	589	611	Salina....	.....	.....	Dry hole	.....	88	Fresh water at 91 ft. Sulphur water at 180ft.
19	1–C	Counties Gas Co.....	100 ft. N. of S. line..... 200 ft. W. of E. road.	1931	588	590	Salina....	.....	.....	Dry hole	.....	95	Fresh water at 90 ft. Black water at 190 ft.
19	1–C	H. L. Emerson No. 1.....	100 ft. N. of S. line..... 1,100 ft. E. of Robinson road.	1936	579	571	Salina....	446 571	Clinton... ?	55	135	83	
19	1–C	H. L. Emerson No. 2.....	50 ft. N. of S. line..... 2,000 ft. E. of Robinson road.	1937	586	588	Salina....	.....	.....	14	135	.....	
3	2–C	Rich Gas Co..... Rinker No. 1	200 ft. N. of S. road..... 1,300 ft. E. of W. road.....	1933	584	641	Salina....	481 580	Clinton... Whirlpool	10	.....	93	Fresh water at 95 ft. Sulphur water at 313 ft.
3	2–C	Rich Gas Co..... Hartsell No. 1	200 ft. S. of N. road..... 1,600 ft. E. of W. road.....	1932	587	632	Salina....	493 588	Clinton... Whirlpool	28	140	92	Fresh water at 110 ft. Black water at 240 ft.

Wells in Moulton Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
3	2-C	Rich Gas Co. Nesbitte No. 2	50 ft. N. of S. road 3,300 ft. E. of W. road	1933	582	648	Salina	505 584	Grimsby. Whirlpool	10	.....	98	Fresh water at 104 ft. Black water at 310 ft.
3	2-C	Emerald Gas Syndicate Arch Angle No. 1	350 ft. N. of S. road 400 ft. W. of E. road	1933	584	652	Salina	470 600	Clinton... Whirlpool	15	145	86	Fresh water at 160 ft. Salt water at 250 ft.
4	2-C	Hope Gas Syndicate R. Angle No. 1	700 ft. N. of S. road 1,200 ft. E. of W. road	1931	587	648	Salina	500 595	Grimsby. Whirlpool	50	150	97	Fresh water at 97 ft. Salt water at 275 ft.
4	2-C	R. Angle No. 2	200 ft. N. of S. line 1,100 ft. E. of W. road	1932	586	650	Salina	505 594	Clinton... Whirlpool	39	150	96	Fresh water at 96 ft. Salt water at 275 ft.
4	2-C	Emerald Gas Syndicate W. Angle No. 1	700 ft. N. of S. line 2,400 ft. W. of E. road.	1932	584	653	Salina	593	Whirlpool	21	185	96	Fresh water at 98 ft. Salt water at 250 ft.
6	2-C	Clover Oil and Gas Company. Emerson No. 1	500 ft. N. of S. road 1,200 ft. W. of E. road.	1921	585	651	Salina	.....	.....	6	127	90	
6	2-C	Clover Oil and Gas Company. Emerson No. 2	100 ft. N. of S. road 300 ft. E. of W. road.	1922	587	662	Salina	607	Whirlpool	25	125	90	
6	2-C	Allied Gas and Oil Company. Emerson No. 3	500 ft. N. of S. road 2,500 ft. W. of E. road	1924	586	666	Salina	490 614	Clinton... Whirlpool	33	100	91	
6	2-C	Amity Gas and Oil Company. N. Carter	100 ft. N. of S. road 100 ft. W. of E. road	1931	586	654	Salina	500 598	Clinton... Whirlpool	48	145	90	Sulphur water at 89 ft.
7	2-C	H. A. Miller A. Carter	450 ft. S. of N. road 850 ft. W. of E. road.	1919	585	671	Salina	469	Clinton...	25	135	100	Small show of oil in whirlpool sandstone.
7	2-C	Maple Leaf Gas and Oil Co. Disher No. 1	450 ft. N. of S. line 100 ft. W. of E. road	1920	584	727	Salina	605 617	Whirlpool	25	175	94	Show of oil at 605 to 617 ft. (Whirlpool).
8	2-C	Allied Gas and Oil Co. M. Mitchener No. 1.	300 ft. N. of S. line 300 ft. E. of W. road.	1932	586	648	Salina	616	Whirlpool	10	110	75	
9	2-C	Maple Leaf Gas and Oil Co. Honsberger No. 1	500 ft. N. of S. line 300 ft. W. of E. road	1920	584	682	Salina	488 523	Clinton...	200	200	91	Show of oil at 613 to 627 ft., Whirlpool sandstone.
9	2-C	Amity Gas and Oil Co. Honsberger No. 2	100 ft. N. of S. line 100 ft. W. of E. road	1931	583	685	Salina	510 540	Clinton... Grimsby	20	90	93	Sulphur water at 90 ft.

9	2-C	Amity Gas and Oil Co..... Honsberger No. 3.....	100 ft. N. of S. line..... 2,200 ft. E. of W. road.	1936	587	631	Salina....	.....	.....	Dry hole	.....	85	
9	2-C	Amity Gas and Oil Co..... R. Teeft No. 1.....	500 ft. N. of S. line..... 1,000 ft. E. of W. road.	1933	587	674	Salina....	510	Clinton...	25	100	96	Sulphur water at 95 ft.
10	2-C	Clover Gas and Oil Co..... A. Moyer No. 1.....	800 ft. N. of S. road..... 100 ft. W. of E. road.	1921	583	684	Salina....	.....	.....	84	100	80	
10	2-C	Clover Gas and Oil Co..... A. Moyer No. 2.....	500 ft. S. of N. line..... 1,000 ft. W. of E. road.....	1921	587	684	Salina....	501 630	Clinton... Whirlpool	70	40	75	
11	2-C	R. H. Smith..... Diltz No. 1.....	100 ft. S. of N. road..... 1,300 ft. E. of W. road.....	1934	587	677	Salina....	511 520	Clinton...	70	29	72	
11	2-C	Diltz No. 2.....	100 ft. S. of N. road..... 2,400 ft. W. of E. road.	1934	585	644	Salina....	512	Clinton...	20	50	66	
11	2-C	Clover Gas and Oil Co..... Moyer No. 3.....	100 ft. N. of S. line..... 1,400 ft. W. of E. road.....	1922	583	686	Salina....	514 630	Clinton... Whirlpool	125	190	65	
11	2-C	Lymburner Bros. and Webber. L. Johnson No. 2.....	100 ft. N. of S. line..... 1,000 ft. E. of W. road.....	1933	586	713	Salina....	540 657	Clinton... Whirlpool	45	155	72	Water at 13 ft.
11	2-C	Lymburner Bros. and Webber L. Johnson No. 4.....	400 ft. N. of S. line..... 1,800 ft. E. of W. road.	1934	586	656	Salina....	.....	.....	Dry hole	.....	75	Fresh water at 70 and 80 ft.
12	2-C	Allied Gas and Oil Co..... C. Johnson No. 1.....	350 ft. S. of N. line..... 2,300 ft. E. of W. road.	.....	587	690	Salina....	515	Clinton...	15	125	65	
12	2-C	Lymburner Bros. and Webber. L. Johnson No. 2.....	100 ft. N. of S. line..... 1,000 ft. E. of W. road.	1931	586	689	Salina....	.....	.....	47	155	74	Water at 70 and 90 ft.
12	2-C	Clover Gas and Oil Co..... L. Haines No. 1.....	100 ft. N. of S. line..... 900 ft. W. of E. road.....	1922	583	692	Salina....	504 638	Clinton... Whirlpool	106	150	76	
13	2-C	Clover Gas and Oil Co..... Ackland No. 1.....	100 ft. S. of N. line..... 2,100 ft. W. of E. road.....	.....	585	693	Salina....	500 693	Clinton... Whirlpool	37	125	67	
13	2-C	Allied Gas and Oil Co..... Silverthorne No. 1.....	100 ft. S. of N. road..... 2,400 ft. E. of W. road.....	1923	586	707	Salina....	555 651	Clinton... Whirlpool	23	215	46	
14	2-C	Allied Gas and Oil Co..... Sundy No. 2.....	100 ft. N. of S. line..... 2,400 ft. W. of E. road.....	1923	587	693	Salina....	506 640	Clinton... Whirlpool	50	125	.....	
17	2-C	P. L. Jackson No. 1.....	50 ft. N. of S. road..... 1,750 ft. W. of E. road.....	1936	584	747	Salina....	604 694	Clinton... Whirlpool	11	160	76	Fresh water at 74 ft. Black water at 163 ft.
17	2-C	P. L. Jackson No. 2.....	50 ft. N. of S. road..... 700 ft. W. of E. road.....	1936	584	764	Salina....	596 700	Clinton... Whirlpool	24	150	94	Fresh water at 90 ft. Black water at 510 ft.
5	3-C	Amity Gas and Oil Co.....	100 ft. E. of W. road..... 200 ft. N. of S. line.	1931	587	732	Salina....	678	Whirlpool	9	160	115	

Wells in Moulton Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
6	3–C	Amity Gas and Oil Co..... Carter No. 1.....	350 ft. N. of S. road..... 750 ft. E. of W. road.....	1931	587	704	Salina....	540 649	Clinton... Whirlpool	38	180	103	Sulphur water at 95 ft.
8	3–C	Maple Leaf Gas and Oil Co.... Carter No. 1.....	100 ft. S. of N. line..... 500 ft. E. of W. road.....	1920	581	683	Salina....	485 630	Clinton... Whirlpool	200	160	110	Show of oil in whirlpool sandstone.
9	3–C	Maple Leaf Gas and Oil Co.... F. Dickout No. 1.....	200 ft. S. of N. line..... 200 ft. E. of W. road.	1920	584	682	Salina....	.....	.....	250	200	91	
9	3–C	Amity Gas and Oil Co..... F. Dickout No. 2.....	200 ft. N. of S. line..... 1,100 ft. E. of W. road.....	.....	581	697	Salina....	512 637	Clinton... Whirlpool	30	110	95	Sulphur water at 96 ft.
9	3–C	Amity Gas and Oil Co..... Chas. Waines No. 1.....	500 ft. S. of N. line..... 1,000 ft. W. of E. road.	1935	584	636	Salina....	.....	.....	Dry hole	.....	95	Sulphur water at 98 ft.
10	3–C	Clover Gas and Oil Co..... Comfort No. 1.....	100 ft. N. of S. road..... 1,400 ft. E. of W. road.....	1922	582	682	Salina....	537 625	Grimsby. Whirlpool	65	150	65	
10	3–C	Dominion Natural Gas Co.... Miller No. 1.....	100 ft. N. of S. road..... 800 ft. W. of E. road.....	1923	582	676	Salina....	530 640	Clinton... Whirlpool	67	252	72	Fresh water at 70 ft. Salt water at 272 ft.
11	3–C	Clover Gas and Oil Co..... Ecker No. 1.....	1,000 ft. S. of N. road..... 100 ft. E. of W. road.....	.....	581	690	Salina....	527 644	Clinton... Whirlpool	166	90	65	
11	3–C	Allied Gas and Oil Co..... Comfort No. 1.....	500 ft. S. of N. road..... 1,600 ft. E. of W. road.....	1923	585	684	Salina....	501 533	Clinton... Grimsby	35	100	77	
12	3–C	Smith and Ehde No. 1.....	200 ft. S. of N. line..... 100 ft. E. of W. road.	1936	585	659	Salina....	514	Clinton...	100	26	68	Fresh water at 68 ft. Black water at 375 ft.
13	3–C	United Gas Co..... E. Schriner No. 1.....	100 ft. S. of N. line..... 1,200 ft. W. of E. road.....	1923	583	676	Salina....	548 657	Clinton... Whirlpool	24	152	84	
13	3–C	Clover Gas and Oil Co..... Hines No. 1.....	200 ft. S. of N. line..... 600 ft. E. of W. road.....	1922	581	690	Salina....	508 645	Clinton... Whirlpool	60	150	78	
9	4–C	United Gas Co..... R. C. McQuillen No. 1.....	1,100 ft. S. of N. line..... 50 ft. E. of W. road.	1923	583	665	Salina....	620	Whirlpool	21	220	102	

9	4-C	Mrs. F. McQuillen No. 1	100 ft. S. of N. line..... 2,100 ft. E. of W. road.....	1932	585	685	Salina....	495 620	Clinton... Whirlpool	52	240	109	Sulphur water at 112 ft.
10	4-C	Dominion Natural Gas Co.... J. F. Waines No. 1.....	500 ft. S. of N. line..... 100 ft. E. of W. road.....	1922	582	663	Salina....	525 630	Clinton... Whirlpool	43	221	85	Fresh water at 83 ft. Salt water at 215 ft.
6	A	Smith and Ehde..... Honsinger No. 1.....	50 ft. N. of S. road..... 100 ft. E. of W. road.	1935	582	626	Salina....	.....	.....	Dry hole	.....	107	Fresh water at 107 ft.
6	A	Honsinger No. 2.....	600 ft. N. of S. road..... 1,000 ft. E. of W. road.	1935	587	629	Salina....	.....	.....	Dry hole	.....	122	Fresh water at 122 ft.
6	A	Honsinger No. 3.....	1,000 ft. N. of S. road..... 1,250 ft. E. of W. road.	1935	587	628	Salina....	.....	.....	Dry hole	.....	118	Fresh water at 117 ft.
6	N.F.R.	Smith and Ehde..... Neff No. 1.....	2,200 ft. N. of S. road..... 100 ft. E. of W. line.	1935	590	654	Salina....	.....	.....	Dry hole	.....	118	Fresh water at 120 ft.
6	N.F.R.	Smith and Ehde..... Neff No. 2.....	1,150 ft. S. of N. line..... 500 ft. W. of E. line.	1935	585	636	.....	.....	.....	Dry hole	.....	120	Fresh water at 119 ft.
7	N.F.R.	Robt. Smith..... W. D. Jones No. 1.....	700 ft. S. of N. line..... 200 ft. W. of E. line.	1933	588	681	.....	.....	.....	Dry hole	.....	114	
7	N.F.R.	Robt. Smith..... W. D. Jones No. 2.....	100 ft. S. of N. line..... 200 ft. W. of E. line.	1933	585	629	.....	.....	.....	Dry hole	.....	115	Sulphur water at 115 ft.
8	N.F.R.	Robt. Smith..... Wm. McKivor No. 1.....	2,800 ft. N. of S. road..... 500 ft. E. of W. road.	1932	588	681	Salina....	630	Whirlpool	28	180	107	Sulphur water at 95 ft.
8	N.F.R.	Robt. Smith..... Wm. McKivor No. 2.....	1,000 ft. S. of N. line..... 400 ft. E. of W. road.	1932	584	689	Salina....	619	Whirlpool	14	175	93	Sulphur water at 120 ft.
8	N.F.R.	Wm. McKivor No. 3.....	100 ft. S. of N. line..... 100 ft. W. of E. line.	1932	586	704	Salina....	520	Clinton...	30	90	115	Sulphur water at 115 ft.
9	N.F.R.	Niagara Natural Gas Co..... Mitchener No. 1.....	1,700 ft. S. of N. line..... 100 ft. W. of E. road.	1931	586	530	Salina....	520	Clinton...	500	135	118	
9	N.F.R.	Mitchener No. 2.....	100 ft. S. of N. line..... 200 ft. W. of E. road.....	1931	585	660	Salina....	500 606	Clinton... Whirlpool	92	125	123	Sulphur water at 120 ft.
9	N.F.R.	Mitchener No. 3.....	500 ft. S. of N. line..... 900 ft. W. of E. road....	1931	586	655	Salina....	514 598	Clinton... Whirlpool	48	180	120	Sulphur water at 118 ft.
9	N.F.R.	Mitchener No. 4.....	1,250 ft. S. of N. line..... 700 ft. W. of E. road.....	1931	584	665	Salina....	497 610	Clinton... Whirlpool	96	130	107	Sulphur water at 105 ft.
9	N.F.R.	Mitchener No. 5.....	400 ft. N. of S. road..... 100 ft. W. of E. road.....	1931	590	712	Salina....	513 652	Clinton... Whirlpool	25	235	85	Sulphur water at 88 ft.
9	N.F.R.	Mitchener No. 6.....	2,000 ft. N. of S. road..... 700 ft. W. of E. road.....	1931	584	696	Salina....	512 640	Clinton... Whirlpool	12	140	90	Sulphur water at 88 ft.

Wells in Moulton Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
10	N.F.R.	Grand River Gas Co..... K. Gracey No. 1.....	2,700 ft. N. of S. road..... 300 ft. W. of E. line.....	1932	587	691	Salina....	528 635	Clinton... Whirlpool	28	210	104	Sulphur water at 104 ft.
10	N.F.R.	Grand River Gas Co..... K. Gracey No. 2.....	1,000 ft. S. of N. line..... 200 ft. E. of W. line.....	1932	585	692	Salina....	543 626	Grimsby. Whirlpool	42	180	106	Sulphur water at 100 ft.
11	N.F.R.	Grand River Gas Co..... J. Glawes No. 1.....	2,800 ft. N. of S. road..... 300 ft. E. of W. line.....	1932	585	695	Salina....	478 640	Clinton... Whirlpool	12	180	90	Sulphur water at 90 ft.
13	N.F.R.	J. V. Riley..... Geo. Burtch No. 1.....	3,000 ft. N. of S. road..... 600 ft. W. of E. road.	1932	589	642	Salina....	.....	.....	Dry hole	.....	95	
14	N.F.R.	United Gas Co..... R. C. McQuillen No. 1.....	1,300 ft. N. of S. road..... 300 ft. E. of W. line.	1924	588	667	Salina....	583	Grimsby.	5	.....	87	
14	N.F.R.	J. V. Riley..... Mrs. F. McQuillen No. 2....	50 ft. S. of N. line..... 50 ft. W. of E. line.	1932	584	698	Salina....	628	Whirlpool	18	180	102	
15	N.F.R.	United Gas Co..... Burtch No. 1.....	100 ft. N. of S. road..... 600 ft. E. of W. line.	1924	591	712	Salina....	676	Whirlpool	21	220	114	
15	N.F.R.	Burtch No. 7.....	1,300 ft. S. of N. line..... 300 ft. W. of E. line.....	1931	586	693	Salina....	530 570	Clinton... Grimsby	42	200	105	Sulphur water at 100 ft.
15	N.F.R.	Burtch No. 8.....	2,000 ft. N. of S. road..... 100 ft. E. of W. line.....	1931	587	704	Salina....	540 580	Clinton... Grimsby	35	180	115	Sulphur water at 112 ft.
15	N.F.R.	Burtch No. 9.....	1,300 ft. S. of N. road..... 400 ft. W. of E. road.....	1931	585	709	Salina....	531 580	Clinton... Grimsby	60	180	95	Sulphur water at 95 ft.
15	N.F.R.	Burtch No. 10.....	100 ft. N. of S. road..... 100 ft. E. of W. line.....	1931	586	724	Salina....	540 565	Clinton... Whirlpool	38	90	131	Sulphur water at 120 ft.
16	N.F.R.	United Gas Co..... Wm. McQuillen No. 1.....	500 ft. S. of N. road..... 150 ft. W. of E. line.....	1932	583	683	Salina....	526 646	Clinton... Whirlpool	64	248	82	
16	N.F.R.	United Gas Co..... Wm. Crown No. 1.....	2,200 ft. N. of S. road..... 100 ft. E. of W. road.....	1933	583	700	Salina....	553 588	Clinton... Grimsby	34	240	109	
17	N.F.R.	United Gas Co..... W. R. Miller No. 2.....	200 ft. S. of N. road..... 100 ft. W. of E. road.....	1923	583	686	Salina....	531 648	Clinton... Whirlpool	52	120	83	

17	N.F.R.	United Gas Co..... A. W. Mitchener No. 1.....	100 ft. N. of S. road..... 500 ft. W. of E. road.....	1924	586	680	Salina....	548 577	Clinton... Grimsby	28	160	79	
18	N.F.R.	Canadian Natural Gas..... Geo. Sockett No. 1.....	350 ft. N. of S. road..... 300 ft. E. of W. line.....	1932	591	720	Salina....	490 665	Clinton... Whirlpool	25	190	80	Sulphur water at 90 ft.
18	N.F.R.	Canadian Natural Gas Syndicate. Geo. Sockett No. 2.....	1,500 ft. N. of S. road..... 500 ft. W. of E. road....	1934	587	709	Salina....	656	Whirlpool	18	185	84	Sulphur water at 85 and 180 ft.
18	N.F.R.	Geo. Sockett No. 3.....	1,000 ft. N. of S. road..... 50 ft. W. of E. line.	1934	588	715	Salina....	655	Whirlpool	13	120	82	Sulphur water at 80 and 87 ft.
19	N.F.R.	Canadian Natural Gas Syndicate. Cooper No. 1.....	150 ft. N. of S. road..... 200 ft. E. of W. line.....	1932	588	711	Salina....	497 640	Clinton... Whirlpool	20	180	83	Sulphur water at 90 ft.
19	N.F.R.	Cooper No. 2.....	1,200 ft. N. of S. road..... 400 ft. W. of E. line.	1932	585	725	Salina....	670	Whirlpool	15	120	85	Sulphur water at 95 ft.
20	N.F.R.	Canadian Natural Gas Syndicate. Stewart No. 1.....	300 ft. N. of S. road..... 150 ft. E. of W. road.	1933	591	727	Salina....	571	Clinton...	26	235	93	Sulphur water at 93 ft.
20	N.F.R.	Stewart No. 2.....	200 ft. S. of N. road..... 200 ft. E. of W. road.	1934	589	684	Salina....	581	Grimsby	31	235	72	Sulphur water at 67 and 75 ft.
20	N.F.R.	Stewart No. 3.....	700 ft. N. of S. road..... 250 ft. W. of E. line.....	1935	588	718	Salina....	585 666	Grimsby. Whirlpool	40	195	86	Sulphur water at 82 and 90 ft.
20	N.F.R.	Stewart No. 4.....	100 ft. N. of S. road..... 400 ft. W. of E. line.....	1934	589	699	Salina....	591 664	Grimsby. Whirlpool	63	190	91	Sulphur water at 92 and 96 ft.
21	N.F.R.	Canadian Natural Gas Syndicate. Melick No. 1.....	100 ft. N. of S. road..... 500 ft. W. of E. road.....	1935	589	728	Salina....	608 678	? Whirlpool	11	200	96	Sulphur water at 100 ft.
21	N.F.R.	Melick No. 2.....	1,500 ft. N. of S. road..... 200 ft. E. of W. line.	1935	587	681	Salina....	.....	.....	Dry hole	.....	73	
22	N.F.R.	United Gas Co. No. 1.....	200 ft. N. of S. road..... 100 ft. E. of W. road.	1923	588	696	Salina....	.....	.....	.....	.....	82	Abandoned.
8	S.F.R.	United Gas Co.....	500 ft. S. of N. road..... 200 ft. E. of W. road.	.....	586	.....	Salina....	.....	.....	.....	.....	.....	
10	S.F.R.	United Gas Co.....	500 ft. N. of S. road..... 100 ft. W. of E. line.	1928	583	.....	.....	.....	.....	.....	.....	.....	
12	S.F.R.	United Gas Co..... L. Farr No. 1.....	2,200 ft. N. of S. road..... 200 ft. W. of E. line.	1926	584	687	Salina....	.....	.....	Dry hole	.....	92	
13	S.F.R.	United Gas Co..... Woods No. 1.....	1,750 ft. S. of N. road..... 100 ft. E. of W. line.....	1924	590	707	Salina....	570 680	Clinton... Whirlpool	55	135	98	

Wells in Moulton Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
13	S.F.R.	United Gas Co. Woods No. 2	700 ft. S. of N. road. 400 ft. E. of W. line.	1925	590	680	Salina	.....	.....	Dry hole	.....	85	
13	S.F.R.	United Gas Co. M. Farr No. 1	1,400 ft. N. of S. road. 500 ft. E. of W. line.	1925	587	737	Salina	577 687	Clinton... Whirlpool	65	120	94	
14	S.F.R.	United Gas Co.	800 ft. S. of N. road. 200 ft. E. of W. road.	1924	590	687	Salina	565 602	Clinton... Grimsby	88	150	95	
15	S.F.R.	United Gas Co. Cook No. 1	2,700 ft. N. of S. road. 600 ft. W. of E. road.	1924	586	693	Salina	.....	.....	90	160	90	
15	S.F.R.	United Gas Co. Cook No. 2	800 ft. S. of N. road. 500 ft. W. of E. road.	1924	585	712	Salina	565 676	Clinton... Whirlpool	34	152	125	
15	S.F.R.	United Gas Co. Clark No. 1	2,000 ft. N. of S. road. 100 ft. W. of E. road.	1925	589	689	Salina	570 605	Clinton... Grimsby	45	150	83	
19	S.F.R.	United Gas Co. McQuillen No. 1	300 ft. S. of N. road. 500 ft. E. of W. road.	1924	589	717	Salina	565 676	Clinton... Whirlpool	116	198	103	
16	S.F.R.	United Gas Co. McQuillen No. 2	1,400 ft. S. of N. road. 500 ft. E. of W. road.	1924	589	723	Salina	575 684	Clinton... Whirlpool	71	170	101	
16	S.F.R.	United Gas Co. Becker No. 1	2,500 ft. N. of S. road. 200 ft. E. of W. road.	1924	585	718	Salina	556 684	Clinton... Whirlpool	18	192	110	
20	S.F.R.	Canadian Natural Gas Syndicate. Etherington No. 1	600 ft. S. of N. road. 300 ft. E. of W. line.	1935	586	734	Salina	606	Grimsby.	30	210	90	Fresh water at 88 ft.
20	S.F.R.	Canadian Natural Gas Syndicate. Etherington No. 2	1,400 ft. S. of N. road. 100 ft. W. of E. line.	1935	585	726	Salina	597	Grimsby.	30	280	88	Fresh water at 100 ft.
4	Cross Con. 1	Lowbanks Drillers Syndicate.	500 ft. S. of N. road. 2,500 ft. W. of E. road.	1934	587	771	Salina	.....	.....	33	275	130	Sulphur water at 125 and 135 ft.
5	"	Lowbanks Drillers Syndicate. Becker No. 1	100 ft. N. of S. road. 1,800 ft. W. of E. road.	1934	582	762	Salina	619	Grimsby.	20	195	127	Sulphur water at 126 and 133 ft.

5	"	Lowbanks Drillers Syndicate. Becker No. 2	100 ft. N. of S. road..... 200 ft. E. of W. line.	1934	579	766	Salina....	708	Whirlpool	27	240	110	Sulphur water at 109 and 115 ft.
5	4	Dominion Natural Gas Co....	300 ft. S. of N. road..... 1,400 ft. W. of E. road.	1917	586	745	Salina....	.....	.....	.....	.....	.....	
9	4	United Gas Co..... Clark No. 2.....	100 ft. S. of N. road..... 1,200 ft. E. of W. road.....	1925	591	722	Salina....	580 701	Clinton... Whirlpool	28	.....	108	Fresh water at 110 ft. Sulphur water at 400 ft.
6	B	Dominion Natural Gas Co....	50 ft. S. of N. line..... 200 ft. E. of W. line.	1925	586	728	Salina....	.....	.....	Dry hole	.....	107	
7	1 R.F.G.R.	Economy Gas Syndicate..... W. McIntee No. 1.....	200 ft. S. of No. 3 highway. 200 ft. E. of W. line.....	1936	583	814	Salina....	608 742	Clinton... Whirlpool	52	200	97	Fresh water at 95 ft. Black water at 240 ft.
7	1 R.F.G.R.	W. McIntee No. 2.....	900 ft. S. of No. 3 highway. 550 ft. E. of W. line.	1936	580	784	Salina....	.....	.....	Dry hole	.....	95	Fresh water at 85 ft. Sulphur water at 425 ft.
1	2 R.F.G.R.	P. L. Jackson..... Gunning No. 1.....	2,100 ft. S. of N. road..... 100 ft. E. of W. road....	1935	584	794	Salina....	580 692	Clinton... Whirlpool	19	110	86	Fresh water at 85 ft. Black water at 340 ft.
1	2 R.F.G.R.	Domestic Natural Gas Co.... Root No. 1.....	2,000 ft. N. of S. road..... 500 ft. E. of W. road.....	1935	581	811	Salina....	575 701	Clinton... Whirlpool	65	165	84	Fresh water at 85 ft. Sulphur water at 450 ft.
1	2 R.F.G.R.	Domestic Natural Gas Co.... Root No. 2.....	2,850 ft. S. of N. road..... 100 ft. E. of W. road.	1936	583	713	Salina....	.....	.....	Dry hole	.....	87	Fresh water at 83 ft. Sulphur water at 385 ft.
1	2 R.F.G.R.	Consolidated Natural Gas..... Marshall No. 1.....	200 ft. N. of S. line..... 300 ft. E. of W. line.....	1934	584	777	Salina....	586 720	Clinton... Whirlpool	42	195	86	Fresh water at 90 ft. Black water at 390 ft.
2	2 R.F.G.R.	Domestic Natural Gas Co.... R. Smithers No. 1.....	1,700 ft. N. of S. road..... 100 ft. E. of W. line.....	1936	582	805	Salina....	573 703	Clinton... Whirlpool	20	195	89	Fresh water at 105 ft. Sulphur water at 285 ft.
2	2 R.F.G.R.	P. L. Jackson No. 1.....	1,900 ft. S. of N. road..... 50 ft. W. of E. line.....	1936	584	753	Salina....	570 691	Clinton... Whirlpool	18	145	92	Fresh water at 112 ft. Sulphur water at 460 ft.
2	2 R.F.G.R.	P. L. Jackson No. 2.....	1,900 ft. S. of N. road..... 50 ft. E. of W. line.	1936	584	750	Salina....	564	Clinton...	8	148	81	Fresh water at 83 ft. Sulphur water at 350 ft.
2	2 R.F.G.R.	P. L. Jackson No. 3.....	NW. Corner.....	1936	583	749	Salina....	692	Whirlpool	8	110	70	Fresh water at 87 ft.
2	2 R.F.G.R.	Domestic Natural Gas..... E. McNichol No. 1.....	800 ft. N. of S. line..... 400 ft. W. of E. line.....	1936	581	818	Salina....	589 725	Clinton... Whirlpool	35	180	.....	
2	2 R.F.G.R.	E. McNichol No. 2.....	3,200 ft. S. of N. road..... 25 ft. W. of E. line.....	1936	584	807	Salina....	598 697	Clinton... Whirlpool	22	190	92	Fresh water at 115 ft. Sulphur water at 440 ft.
6	2 R.F.G.R.	Dominion Natural Gas Co.... A. Phillips No. 1.....	100 ft. N. of S. road..... 450 ft. W. of E. line.	1931	587	738	Salina....	.....	.....	Dry hole	.....	105	
8	2 R.F.G.R.	Dominion Natural Gas Co.... Walker No. 2.....	100 ft. N. of S. road..... 100 ft. E. of W. road.	1928	586	780	Salina....	.....	.....	37	.....	87	Abandoned.

Wells in Moulton Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
8	2 R.F.G.R.	Dominion Natural Gas Co.... Walker No. 3.....	1,200 ft. S. of N. road..... 100 ft. E. of W. road.....	1930	584	782	Salina....	621 750	? Whirlpool	15	225	98	Fresh water at 100 ft. Salt water at 400 ft.
9	2 R.F.G.R.	Dominion Natural Gas Co.... Ferguson No. 1.....	100 ft. S. of N. road..... 100 ft. W. of E. line.	1931	586	708	Salina....	.....	.....	Dry hole	.....	74	Fresh water at 75 ft. Salt water at 375 ft.
9	2 R.F.G.R.	Dominion Natural Gas Co.... Poole No. 1.....	100 ft. N. of S. road..... 400 ft. W. of E. line.....	1931	585	775	Salina....	615 742	Clinton... Whirlpool	17	227	93	Fresh water at 95 ft. Salt water at 400 ft.
10	2 R.F.G.R.	Dominion Natural Gas Co....	100 ft. N. of S. road..... 200 ft. W. of E. line.	1928	589	.....	Salina....	.....	.....	.....	.....	.....	Abandoned.
12	2 R.F.G.R.	United Gas Co..... F. W. Rouse No. 1.....	1,300 ft. N. of S. road..... 200 ft. W. of E. road.....	1925	589	762	Salina....	617 727	Clinton... Whirlpool	17	274	89	
24	2 R.F.G.R.	Dominion Natural Gas Co.... H. Wheatly No. 1.....	400 ft. S. of N. line..... 100 ft. W. of E. road.	1931	582	799	Salina....	.....	.....	Dry hole	.....	127	Fresh water at 170 ft. Salt water at 500 ft.
1	1 L.E.	Dominion Natural Gas Co....	1,000 ft. S. of N. road..... 100 ft. W. of E. road.	1930	576	.....	Salina....	.....	.....	.....	.....	.....	Abandoned.
2	1 L.E.	Sterling Gas Co..... Burkett No. 1.....	400 ft. N. of S. road..... 100 ft. W. of E. line.	1917	580	807	Salina....	792	Whirlpool	50	350	137	
2	1 L.E.	Sterling Gas Co..... Burkett No. 2.....	400 ft. S. of N. road..... 200 ft. W. of E. line.	1917	576	852	Salina....	710	Clinton...	15	250	158	
3	1 L.E.	Sterling Gas Co..... Mann No. 1.....	1,100 ft. S. of N. road..... 100 ft. E. of W. road.	1916	576	812	Salina....	674	Clinton...	20	325	142	
3	1 L.E.	Sterling Gas Co..... Pew No. 2.....	1,500 ft. N. of S. road..... 500 ft. E. of W. road.....	1916	579	825	Salina....	678 805	Clinton... Whirlpool	20	325	144	
4	1 L.E.	Dominion Natural Gas Co.... Mitchener No. 1.....	1,550 ft. S. of N. line..... 700 ft. W. of E. road.	1916	578	855	Salina....	813	Whirlpool	22	360	137	
4	1 L.E.	Williams No. 1.....	1,800 ft. N. of S. road..... 200 ft. W. of E. road.	1913	580	813	Salina....	.....	.....	.....	.....	.....	Abandoned.
5	1 L.E.	Dominion Natural Gas Co.... Houser No. 1.....	50 ft. S. of N. line..... 400 ft. E. of W. line.	1913	577	832	Salina....	820	Whirlpool	20	350	117	Abandoned.

5	1 L.E.	Dominion Natural Gas Co.... Houser No. 2.....	1,500 ft. N. of S. road..... 100 ft. W. of E. line.	1914	578	825	Salina....	790	Whirlpool	70	360	135	
6	1 L.E.	Dominion Natural Gas Co.... Furry No. 1.....	100 ft. S. of N. line..... 300 ft. W. of E. line.	1914	576	804	Salina....	.....	.....	.....	.....	126	Abandoned.
6	1 L.E.	Dominion Natural Gas Co.... Berkitt No. 1.....	100 ft. S. of N. line..... 150 ft. E. of W. line.	1913	576	.....	Salina....	.....	.....	.....	.....	.....	
7	1 L.E.	Barrick No. 1.....	1,500 ft. S. of N. line..... 300 ft. E. of W. line.....	1914	579	803	Salina....	662 719	Clinton... Grimsby	.....	.....	137	Abandoned.
7	1 L.E.	Barrick No. 2.....	50 ft. S. of N. line..... 150 ft. E. of W. line.....	1914	577	821	Salina....	676 732	Clinton... Grimsby	12	325	128	
8	1 L.E.	Dominion Natural Gas Co.... Pew No. 1.....	1,500 ft. S. of N. line..... 200 ft. E. of W. line.	1913	580	850	Salina....	.....	.....	.....	.....	.....	
9	1 L.E.	Dominion Natural Gas Co.... Eyers No. 1.....	2,500 ft. S. of N. line..... 300 ft. E. of W. line.....	.....	580	850	Salina....	....	Grimsby Whirlpool	105	460	.....	
9	1 L.E.	Dominion Natural Gas Co.... Burdett No. 1.....	100 ft. S. of N. line..... 100 ft. W. of E. line.....	1914	579	805	Salina....	664 784	Clinton... Grimsby	14	350	136	Abandoned.
10	1 L.E.	Sterling Gas Co..... King No. 1.....	600 ft. N. of S. road..... 100 ft. W. of E. line.	1912	588	885	Salina....	784	Grimsby	.....	.....	.....	
10	1 L.E.	Dominion Natural Gas Co.... Vaughan No. 1.....	3,150 ft. N. of S. road..... 350 ft. E. of W. line.....	1913	581	835	Salina....	....	Clinton... Whirlpool	.....	.....	.....	
11	1 L.E.	D. A. Furry No. 1.....	3,300 ft. N. of S. road..... 300 ft. E. of W. line.....	1913	581	855	Salina....	....	Clinton... Whirlpool	125	345	.....	
12	1 L.E.	A. Furry No. 1.....	2,400 ft. S. of N. line..... 100 ft. W. of E. line.....	1914	581	888	Salina....	707 850	Clinton... Whirlpool	75	340	60	
12	1 L.E.	Roy Furry No. 1.....	3,700 ft. S. of N. line..... 500 ft. W. of E. line.....	1914	581	867	Salina....	....	Clinton... Whirlpool	75	.....	121	
9	2 L.E.	Stromwell Gas Syndicate..... McCallum No. 1.....	100 ft. S. of N. road..... 100 ft. W. of E. line.	1934	582	773	Salina....	656	Clinton...	23	260	144	Fresh water at 130 ft. Sulphur water at 153 ft.
9	2 L.E.	McCallum No. 2.....	1,800 ft. S. of N. road..... 100 ft. W. of E. line.....	1934	580	788	Salina....	667 688	Clinton... Grimsby	18	350	157	Fresh water at 145 ft. Sulphur water at 165 ft.
10	2 L.E.	Sterling Natural Gas Co.....	5,200 ft. S. of N. road..... 300 ft. E. of W. line.....	1912	580	844	Salina....	....	Clinton... Grimsby	.....	.....	.....	
13	2 L.E.	Stromwell Gas Syndicate..... McCallum No. 3.....	500 ft. S. of N. road..... 200 ft. W. of E. line.	1935	580	774	Salina....	.....	.....	Dry hole	.....	146	
9	3 L.E.	Sterling Natural Gas Co..... E. Clark No. 1.....	2,250 ft. N. of S. road..... 100 ft. W. of E. road.	1922	581	760	Salina....	.....	.....	.....	.....	118	

Wells in Moulton Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
10	3 L.E.	Sterling Natural Gas Co..... J. K. Bradley.....	100 ft. N. of S. road..... 100 ft. E. of W. line.....	1922	582	802	Salina....	634 770	Clinton... Whirlpool	....	235	139	
12	3 L.E.	Sterling Natural Gas Co.....	100 ft. N. of S. road..... 100 ft. W. of E. line.	.....	580	806	Salina....	770	Whirlpool	15	268	132	
13	3 L.E.	Sterling Natural Gas Co..... F. Gibson No. 1.....	100 ft. N. of S. road..... 200 ft. W. of E. line.....	1922	581	804	Salina....	665 770	Clinton... Whirlpool	58	300	139	
13	3 L.E.	Gibson No. 2.....	1,400 ft. N. of S. road..... 100 ft. W. of E. line.....	1922	581	803	Salina....	629 767	Clinton... Whirlpool	.....	308	130	
14	3 L.E.	Sterling Natural Gas Co..... Rittenhouse No. 1.....	150 ft. N. of S. road..... 150 ft. E. of W. road.	1922	581	782	Salina....	640	Clinton...	15	225	128	
14	3 L.E.	Rittenhouse No. 2.....	100 ft. N. of S. road..... 100 ft. W. of E. line.	.....	582	810	Salina....	.....	.....	.....	.....	140	
19	3 L.E.	Dominion Natural Gas Co.... L. McCallum No. 1.....	300 ft. N. of S. road..... 150 ft. E. of W. road.	1931	581	802	Salina....	.....	.....	Dry hole	.....	114	Fresh water at 115 ft. Salt water at 500 ft.
5	E.B.D.	Sterling Natural Gas Co..... A. Minor.....	100 ft. N. of S. road..... 600 ft. E. of W. road.	1915	575	799	Salina....	662	Clinton...	10	350	156	
2	E.B.D.	Smith and Ehde..... E. Cook No. 1.....	750 ft. E. of B.D. road.. 375 ft. N. of S. line.	1937	577	796	Salina....	.....	.....	Dry hole	195	148	
2	E.B.D.	Smith and Ehde..... E. Cook No. 2.....	1,400 ft. E. of B.D. road.. 60 ft. N. of S. line.	1937	577	811	Salina....	679	Grimsby.	20	195	115	
2	E.B.D.	Smith and Ehde..... E. Cook No. 3.....	80 ft. E. of B.D. road.. 60 ft. N. of S. line.	1937	575	796	Salina....	.....	.....	Dry hole	.....	159	
		Town of Dunnville..... G. S. Brooke No. 1.....	1,000 ft. S. of C.N. Rys... 500 ft. E. of W. line.....	1935	579	797	Salina....	626 742	Clinton... Whirlpool	63	175	83	
		W. H. Culver, jr.....	1,700 ft. S. of N. road..... 300 ft. E. of W. road.....	1933	585	652	Salina....	618 740	Clinton... Whirlpool	5	155	72	

		S. McKechnie	Town lot No. 21	1935	580	791	Salina	600 739	Clinton... Whirlpool	46	150	79	Fresh water at 79 and 175 ft. Black water at 510 ft.
		P. L. Jackson No. 1	700 ft. S. of C.N. Rys... 3,900 ft. E. of Tp. line	1932	582	788	Salina	612 734	Clinton... Whirlpool	15	170	63	Fresh water at 70 ft. Sulphur water at 310 ft.
		Dashwood and Sons	150 ft. N. of River road. 2,700 ft. E. of Tp. line.	1934	584	783	Salina			11	125	70	Black water at 170 ft.
		P. L. Jackson No. 2	650 ft. N. of River road. 2,300 ft. E. of Tp. line	1934	584	781	Salina	609 730	Clinton... Whirlpool	80		71	Fresh water at 78 ft. Sulphur water at 270 ft.
		County Home, Dunnville	915 ft. E. of Robinson road. 350 ft. S. of C.N. Rys.	1937	589	774	Salina			7	200	72	
11	S.D.R.	Houk, Bartlett, Fry, and Ross R. Root	50 ft. S. of Diltz road.. 585 ft. E. of Diltz road..	1938	584	763	Salina	577 618	Clinton... Grimsby.	14 24	120	83	Fresh water at 110 ft., rises 90 ft.

Wells in North Cayuga Township, Haldimand County

A-B	1 N.T.R.	Gas Finders Co. J. Myers No. 1.	NE. Corner	1934	603	613	Salina			50	250	58	Fresh water at 55 ft. Sulphur water at 110 ft.
A-B	1 N.T.R.	J. Myers No. 2	500 ft. S. of N. road..... 500 ft. E. of W. line.	1934	600	563	Salina			Dry hole		54	Fresh water at 40 ft. Sulphur water at 65 ft.
A-B	1 N.T.R.	J. Myers No. 3	100 ft. S. of N. road..... 1,150 ft. E. of W. line.	1934	585	587	Salina			40	245	38	Fresh water at 38 ft. Sulphur water at 80 ft. Black water at 200 ft.
A-B	1 N.T.R.	Dominion Natural Gas Co.... M. Meyer No. 3	1,000 ft. S. of N. road..... 150 ft. E. of W. line.	1922	608	640	Salina			16	146	52	
A-B	1 N.T.R.	M. Meyer No. 4	3,200 ft. S. of N. road..... 300 ft. W. of E. line.	1922	601	650	Salina	476 492 589	Clinton... Grimsby. Whirlpool	8 26 9	150	52	Fresh water at 57 ft. Salt water at 180 ft.
1	1 N.T.R.	Azoff Gas Co	2,200 ft. N. of S. road..... 600 ft. E. of W. line.		612	625	Salina			42	175	45	
9	1 N.T.R.	Azoff Gas Co	1,400 ft. S. of N. road..... 50 ft. E. of W. line.	1925	628	650	Salina	529 635		66	210	55	
9	1 N.T.R.	Dominion Natural Gas Co. Jas. Campbell No. 1		1929		678	Salina	494 627	Clinton... Whirlpool	66	200	42	Water at 42 and 49 ft.
10	1 N.T.R.	Dominion Natural Gas Co.... W. H. Gowling No. 1	1,100 ft. S. of N. road..... 50 ft. E. of W. line.	1930	630	642	Salina	507 633	Clinton... Whirlpool	1		48	Fresh water at 48 and 54 ft.

Wells in North Cayuga Township, Haldimand County — Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
11	1 N.T.R.	W. H. Gowling No. 2	2,300 ft. S. of N. road..... 500 ft. E. of W. line.	1930	631	637	Salina....	.....	.....	Dry hole	.....	58	Fresh water at 58 ft.
11	1 N.T.R.	E. Avery and Associates..... A. Baker No. 1.....	.....	1934	.....	704	Salina....	518 649	Clinton... Whirlpool	21	260	55	Fresh water at 60 ft.
12	1 N.T.R.	W. C. Patterson.....	3,100 ft. S. of N. road..... 720 ft. E. of W. line.	1929	638	668	Salina....	.....	.....	Dry hole	.....	40	
12	1 N.T.R.	E. Avery and Associates..... Wm. Humphrey No. 2.	.....	1934	.....	708	Salina....	523 651	Clinton... Whirlpool	31	260	60	Fresh water at 61 ft.
12	1 N.T.R.	E. Avery and Associates..... Wm. Humphrey No. 1.	.....	1934	.....	714	Salina....	542 661	Clinton... Whirlpool	35	240	55	Fresh water at 60 ft.
13	1 N.T.R.	W. C. Patterson..... Robt. Eilson No. 2.	NW. Corner.....	1929	632	671	Salina....	.....	.....	Dry hole	.....	46	
13	1 N.T.R.	Union Gas Co. No. 114.....	3,250 ft. N. of S. road..... 350 ft. W. of E. line.....	1927	639	790	Salina....	595 690	Clinton... Whirlpool	50	.....	68	
14	1 N.T.R.	Union Gas Co. No. 102.....	2,600 ft. S. of N. road..... 50 ft. E. of W. line.....	1929	648	777	Salina....	577 659	Grimsby.	60	300	53	
14	1 N.T.R.	Union Gas No. 113.....	3,200 ft. S. of N. road..... 150 ft. W. of E. line.	1929	644	795	Salina....	.....	.....	106	275	54	
15	1 N.T.R.	W. C. Patterson..... Chas. Walker No. 1.....	3,500 ft. S. of N. road..... 150 ft. E. of W. line.....	1929	646	801	Salina....	579 676	Grimsby Whirlpool	65	258	60	
16	1 N.T.R.	W. C. Patterson..... S. Coverdale No. 2.....	3,150 ft. S. of N. road..... 500 ft. E. of W. line.	1929	647	690	Salina....	.....	.....	Dry hole	.....	63	
16	1 N.T.R.	Union Gas Co. No. 99.....	SE. Corner.....	.....	643	.....	Salina....	.....	.....	.....	.....	56	
18	1 N.T.R.	Union Gas Co. No. 86.....	3,250 ft. S. of N. road..... 400 ft. E. of W. line.....	1929	650	716	Salina....	576 599	Clinton... Grimsby	116	345	66	
18	1 N.T.R.	Union Gas Co. No. 82.....	600 ft. N. of S. road..... 300 ft. W. of E. line.	.....	652	.....	.....	.....	.....	.....	.....	.....	

19	1 N.T.R.	Union Gas Co. No. 80	600 ft. N. of S. road..... 50 ft. W. of E. line.	.....	654	.....	.....	.....	.....	.....	.....	.....	
20	1 N.T.R.	W. C. Patterson..... T. Doyle No. 1.	SE. Corner.....	1929	647	705	Salina....	.....	.....	Dry hole	.....	73	
24	1 N.T.R.	W. C. Patterson..... W. A. Oster No. 2.....	1,000 ft. N. of S. road..... 50 ft. W. of E. line.	1929	641	736	Salina....	575	Clinton...	285	265	41	
24	1 N.T.R.	Union Gas Co. No. 62.....	800 ft. N. of S. road..... 50 ft. E. of W. line.	.....	646	.....	.....	.....	.....	.....	.....	41	
25	1 N.T.R.	Union Gas Co. No. 60.....	1,000 ft. N. of S. road..... 50 ft. E. of W. line.	1929	648	719	Salina....	583	Clinton...	260	245	47	
25	1 N.T.R.	Union Gas Co. No. 61.....	100 ft. N. of S. road..... 600 ft. W. of E. line.....	1929	649	743	Salina....	583 605	Clinton...	225	250	40	
26	1 N.T.R.	Dominion Natural Gas Co.... A. and G. Geddes No. 1.	1,000 ft. N. of S. road..... 50 ft. E. of W. line.	1929	661	724	Salina....	.....	Clinton...	44	254	57	Fresh water at 110 ft. Salt water at 350 ft.
26	1 N.T.R.	A. and G. Geddes No. 2....	3,000 ft. S. of N. road..... 250 ft. E. of W. line.....	1929	649	701	Salina....	565 586	Clinton...	392	300	43	Fresh water at 120 ft. Salt water at 330 ft.
26	1 N.T.R.	Dominion Natural Gas Co.... A. and G. Geddes No. 3....	1,650 ft. S. of N. road..... 400 ft. E. of W. line.	1929	643	689	Salina....	.....	.....	Dry hole	.....	54	Fresh water at 85 ft. Salt water at 330 ft.
26	1 N.T.R.	Dominion Natural Gas Co....	100 ft. N. of S. road..... 700 ft. W. of E. line.	1929	645	713	Salina....	570	Clinton...	82	250	40	Fresh water at 125 ft. Salt water at 350 ft.
26	1 N.T.R.	Dominion Natural Gas Co....	2,000 ft. N. of S. road..... 500 ft. W. of E. line.	1927	654	708	Salina....	601	Grimsby.	41	320	38	Fresh water at 85 ft. Black water at 350 ft.
26	1 N.T.R.	Dominion Natural Gas Co....	.....	1929	.....	708	Salina....	577	Clinton...	48	285	48	Fresh water at 115 ft. Salt water at 350 ft.
27	1 N.T.R.	Dominion Natural Gas Co....	2,200 ft. N. of S. road..... 500 ft. W. of E. line.....	1929	642	701	Salina....	569 602	Clinton... Grimsby.	10 50	307	58	Fresh water at 70 ft. Salt water at 345 ft.
27	1 N.T.R.	Dominion Natural Gas Co....	2,750 ft. S. of N. road..... 250 ft. E. of W. line.	1929	646	699	Salina....	568	Clinton...	92	287	60	Fresh water at 80 ft. Salt water at 333 ft.
28	1 N.T.R.	Dominion Natural Gas Co.... John Shipway No. 3.	SW. Corner.....	1929	629	695	Salina....	557	Clinton...	27	250	47	Fresh water at 100 ft. Salt water at 330 ft.
28	1 N.T.R.	Dominion Natural Gas Co....	.....	1929	.....	691	Salina....	555	Clinton...	22	265	51	Fresh water at 110 ft. Salt water at 335 ft.
29	1 N.T.R.	Domestic Natural Gas Syndicate. P. McFarlin No. 1.	.....	1935	.....	696	Salina....	.....	.....	Dry hole	.....	51	Fresh water at 60 an 100 ft.
34	1 N.T.R.	Dominion Natural Gas Co....	2,156 ft. S. of N. road..... 450 ft. W. of E. line.	1923	617	692	Salina....	578	Clinton...	7	.....	48	

Wells in North Cayuga Township, Haldimand County — Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
34	1 N.T.R.	Otterville Gas Syndicate..... Jas. Doyle No. 1.	50 ft. N. of S. road..... 100 ft. E. of W. line.	1936	594	.....	Salina....	.....	.....	Dry hole	.....	31	Fresh water at 41 ft., rises 20 ft. Sulphur water at 64 ft., rises 52 ft.
34	1 N.T.R.	Otterville Gas Syndicate..... M. Conley No. 1.....	100 ft. N. of S. road..... 100 ft. E. of W. line.	1936	600	700	Onondaga	.....	.....	Dry hole	.....	42	Fresh water at 40 ft., rises 25 ft.
35	1 N.T.R.	Dominion Natural Gas Co....	1,000 ft. S. of N. road..... 400 ft. W. of E. line.	1923	613	692	Salina....	562	Clinton...	28	380	47	
35	1 N.T.R.	?	NE. Corner.....	1935	584	647	Salina....	.....	.....	24	200	.....	
36	1 N.T.R.	Dominion Natural Gas Co.... J. Craven No. 1.....	100 ft. N. of S. road..... 50 ft. E. of W. line.	1930	613	752	Onondaga	.....	.....	Dry hole	.....	24	Fresh water at 95 and 180 ft. Black water at 425 ft.
36	1 N.T.R.	F. Armitage..... J. Craven No. 4.....	1,650 ft. N. of S. road..... 60 ft. E. of W. road.	1937	669	752	Salina....	658	Grimsby.	37	.....	40	Black water at 120 ft.
36	1 N.T.R.	J Craven No. 5.....	200 ft. N. of S. road..... 75 ft. E. of W. road.	1937	679	775	Salina....	.....	.....	Dry hole.	.....	82	Fresh water at 65 ft. Black water at 165 ft.
36	1 N.T.R.	J. Craven No. 6.....	50 ft. W. of E. line..... 1,600 ft. N. of S. road.....	1937	646	742	Salina....	.....	.....	Dry hole.	.....	34	Fresh water at 80 ft. Sulphur water at 160 ft.
36	1 N.T.R.	F. A. Tanner..... A. Riley.....	24 ft. W. of E. road..... 500 ft. S. of N. road.	1937	640	760	Salina....	.....	.....	Dry hole.	.....	39	Sulphur water at 81 ft.
36	.....	J. Craven No. 3.....	1,750 ft. N. of S. road..... 100 ft. E. of W. road.....	1936	667	750	?	618 646	Clinton... Grimsby	30	.....	32	Fresh water at 70 ft., rises 50 ft. Sulphur water at 125 ft.
37	1 N.T.R.	Dominion Natural Gas Co.... Nicolas Last No. 1.....	900 ft. N. of S. road..... 150 ft. E. of W. line.	1930	621	767	Onondaga	651	Clinton...	30	360	55	Fresh water at 125 ft. Black water at 425 ft.
37	1 N.T.R.	P. L. Jackson..... J. Craven.....	100 ft. S. of N. road..... 100 ft. W. of E. road.	1936	623	678	Salina....	562	Clinton...	30	300	.....	
38	1 N.T.R.	Dominion Natural Gas Co.... R. J. Craven No. 1.....	2,200 ft. N. of S. road..... 50 ft. E. of W. line.	1930	662	759	Onondaga	.....	.....	Dry hole.	.....	23	Fresh water at 80 ft. Black water at 450 ft.

39	1 N.T.R.	Dominion Natural Gas Co.... Jos. Toohey No. 1.....	800 ft. N. of S. road..... 50 ft. W. of E. line.	1929	679	780	Onondaga	646	Clinton...	78	325	20	Fresh water at 30 ft. Black water at 450 ft.
40	1 N.T.R.	Jos. Toohey No. 2.....	1,300 ft. N. of S. road..... 250 ft. W. of E. line.	1930	678	783	Onondaga	674	Clinton...	46	352	21	Fresh water at 60 ft. Black water at 440 ft.
40	1 N.T.R.	Dominion Natural Gas Co.... Nicolas Last No. 1.....	3,550 ft. S. of N. road..... 600 ft. W. of E. line.	1930	654	747	Onondaga	641	Clinton...	50	375	53	Fresh water at 60 ft. Black water at 400 ft.
40	1 N.T.R.	Dominion Natural Gas Co.... R. E. King No. 1.....	2,100 ft. S. of N. road..... 500 ft. W. of E. line.....	1930	661	724	Salina....	600 656	Clinton.. Grimsby	43	350	32	Fresh water at 40 ft. Black water at 410 ft.
40	1 N.T.R.	R. E. King No. 2.....	650 ft. S. of N. road..... 600 ft. W. of E. line.	1930	652	706	Salina....	614	Grimsby.	16	350	42	Fresh water at 55 ft. Black water at 400 ft.
41	1 N.T.R.	Dominion Natural Gas Co.... A. Foster No. 1.....	1,750 ft. N. of S. road..... 250 ft. W. of E. line.	1930	665	766	Onondaga	656	Clinton...	83	375	58	Fresh water at 68 and 90 ft. Black water at 425 ft.
41	1 N.T.R.	A. Foster No. 2.....	3,000 ft. N. of S. road..... 300 ft. E. of W. line.	1930	646	742	Onondaga	640	Grimsby.	55	375	30	Fresh water at 30 ft. Black water at 425 ft.
42	1 N.T.R.	Dominion Natural Gas Co.... E. Lalonde No. 1.....	2,000 ft. N. of S. road..... 500 ft. W. of E. line.	1930	645	751	Salina....	.....	.....	Dry hole.	.....	41	Fresh water at 42 ft. Black water at 422 ft.
42	1 N.T.R.	Dominion Natural Gas Co.... W. Murray No. 1.....	1,250 ft. S. of N. road..... 350 ft. W. of E. line.	1930	657	726	Salina....	599	Clinton..	34	360	49	Fresh water at 55 ft. Black water at 400 ft.
43	1 N.T.R	W. Murray No. 2.....	650 ft. S. of N. road..... 50 ft. E. of W. line.	1931	673	742	Salina....	.....	.....	Dry hole.	.....	73	Fresh water at 75 ft. Black water at 400 ft.
49	1 N.T.R.	Consolidated Gas Co..... Armstrong No. 1.....	650 ft. S. of N. road..... 100 ft. W. of E. line.	1936	711	823	Oriskany.	690	Clinton...	9	300	4	Fresh water at 120 ft. Sulphur water at 125 ft.
52	1 N.T.R.	Midfield Gas Corp., Ltd..... J. Clark No. 1.	.....	1919	.....	869	Onondaga	721 771	Clinton... Grimsby	125	370	8	
52	1 N.T.R.	J. Clark No. 2.....	2,500 ft. S. of N. road..... 100 ft. W. of E. line.	1935	704	836	Onondaga	710	Clinton...	18	340	6	Fresh water at 40 ft.
52	1 N.T.R.	J. Clark No. 1.....	450 ft. S. of N. road..... 40 ft. E. of W. line.	1937	716	835	.....	.....	.....	Dry hole.	.....	7	Water at 40 ft., rose 15 ft.
52	1 N.T.R.	J. Clark No. 2.....	2,200 ft. S. of N. road..... 42 ft. W. of E. line.	1937	713	856	.....	718	Clinton...	18	280	0	Water at 35 ft., rose 10 ft.
52	1 N.T.R.	J. Clark No. 3.....	1,100 ft. E. of W. line..... 42 ft. S. of N. road.	1937	720	856	.....	718	Clinton...	10	330	0	Water at 35 ft., rose 10 ft.
52	1 N.T.R.	J. Clark No. 4.....	2,375 ft. S. of N. road..... 550 ft. W. of E. line.	1937	713	835	.....	.....	.....	Dry hole.	.....	7	Water at 40 ft., rose 15 ft.
54	1 N.T.R.	Dominion Natural Gas Co....	650 ft. S. of N. road..... 400 ft. E. of W. line.	1922	706	847	Onondaga	715	Clinton...	24	400	60	

Wells in North Cayuga Township, Haldimand County — Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
55	1 N.T.R.	Dominion Natural Gas Co....	SE. Corner.....	.....	712	.....	.....	.....	.....	.....	.....	.....	
3	1 S.T.R.	Azoff Gas Co..... P. Follick.	.....	1920	.....	604	Salina....	.....	.....	39	150	38	
4	1 S.T.R.	Canfield Natural Gas Co.....	SE. Corner.....	1925	619	700	Salina....	.....	Grimsby.	27	155	60	Sulphur water at 80 ft.
6	1 S.T.R.	Darling Road Gas Syndicate. Mrs. J. McDonald No. 4....	1,200 ft. N. of S. road..... 200 ft. E. of W. line.	1923	606	709	Salina....	560	Grimsby.	27	217	66	
6	1 S.T.R.	Azoff Gas Co..... E. Tomlinson No. 1.....	2,800 ft. S. of N. road..... 550 ft. E. of W. line.	1925	618	640	Salina....	.....	.....	Dry hole.	.....	52	
8	1 S.T.R.	Canfield Natural Gas Co..... Fred Gowling No. 1.	NE. Corner.....	1925	605	687	Salina....	520	Clinton...	30	270	37	Sulphur water at 70 ft
9	1 S.T.R.	Dominion Natural Gas Co.... R. Moodie No. 1.	1,050 ft. N. of S. road..... 50 ft. W. of E. line.	1930	621	681	Salina....	675	Whirlpool	.....	.....	43	Show of gas at 675 ft. Fresh water at 48 ft. Sulphur water at 260 ft.
10	1 S.T.R.	Wm. Moodie No. 1.....	2,100 ft. N. of S. road..... 600 ft. W. of E. line.	1930	620	688	Salina....	548	Clinton...	50	290	54	Fresh water at 57 ft.
10	1 S.T.R.	E. Avery and Associates..... Wm. Haines No. 1.....	1,600 ft. S. of N. road..... 50 ft. W. of E. line.....	1935	611	723	Salina....	554 666	Clinton... Whirlpool	93	230	63	Fresh water at 64 ft.
10	1 S.T.R.	Wm. Haines No. 2.....	2,700 ft. S. of N. road..... 50 ft. W. of E. line.	1935	617	671	Salina....	.....	.....	Dry hole.	.....	53	Fresh water at 50 ft.
10	1 S.T.R.	Wm. Haines No. 3.....	2,300 ft. S. of N. road..... 600 ft. E. of W. line.....	1935	620	700	Salina....	531 655	Clinton... Whirlpool	58	200	59	Fresh water at 60 ft.
11	1 S.T.R.	Dominion Natural Gas Co.... W. Vickers No. 1.....	2,350 ft. S. of N. road..... 100 ft. E. of W. line.....	1930	621	697	Salina....	562 673	Clinton... Whirlpool	68	266	62	Fresh water at 65 ft. Salt water at 260 ft.
11	1 S.T.R.	Dominion Natural Gas Co.... P. W. Coverdale No. 1.....	50 ft. N. of S. road..... 650 ft. W. of E. line.	1930	632	690	Salina....	569	Clinton...	13	297	58	Fresh water at 80 ft. Salt water at 311 ft.
11	1 S.T.R.	P. W. Coverdale No. 2.....	1,400 ft. N. of S. road..... 200 ft. E. of W. line.	1930	637	704	Salina....	556	Clinton...	78	288	50	Fresh water at 66 ft. Salt water at 308 ft.
11	1 S.T.R.	P. W. Coverdale No. 3.....	2,900 ft. N. of S. road..... 50 ft. W. of E. line.	1931	618	682	Salina....	543	Clinton...	18	280	48	Fresh water at 49 ft.

12	1 S.T.R.	E. Avery and Associates..... B. Carter No. 1.....	2,000 ft. S. of N. road..... 50 ft. E. of W. line.	1935	633	682	Salina....	.....	.....	Dry hole.	.....	57	Fresh water at 60 ft.
12	1 S.T.R	B. Carter No. 2.....	2,900 ft. S. of N. road..... 800 ft. W. of E. line.....	1935	628	726	Salina....	538 671	Clinton... Whirlpool	32	220	57	
12	1 S.T.R.	Dominion Natural Gas Co.... Caroline E. Stewart No. 1..	2,700 ft. N. of S. road..... 75 ft. W. of E. line.....	1930	618	722	Salina....	589 668	Grimsby. Whirlpool	60	300	51	Fresh water at 60 ft. Black water at 295 ft.
13	1 S.T.R.	P. L. Jackson..... Baker No. 1.....	2,600 ft. S. of N. road..... 800 ft. W. of E. road.	1936	629	683	Salina....	.....	.....	Dry hole.	.....	64	Fresh water at 30 and 68 ft. Black water at 175 ft.
18	1 S.T.R.	Union Gas No. 88.....	1,000 ft. S. of N. road..... 250 ft. E. of W. line.	.....	649	.....	.....	.....	.....	.....	.....	.....	
18	1 S.T.R	Union Gas Co. No. 89.....	2,200 ft. S. of N. road..... 200 ft. E. of W. line.	.....	648	.....	.....	.....	.....	.....	.....	.....	
19	1 S.T.R.	W. C. Patterson..... Mrs. Oxley No. 1.....	3,000 ft. N. of S. road..... 50 ft. W. of E. line.	1929	642	774	Salina....	658	Whirlpool	38	245	50	
19	1 S.T.R.	W. C. Patterson..... P. Windecker No. 2.	SE. Corner.....	1925	636	730	Salina....	644	.....	17	350	78	Abandoned.
19	1 S.T.R.	Union Gas Co. No. 81..... Mrs. Oxley No. 2.....	400 ft. S. of N. road..... 650 ft. W. of E. line.	1929	650	785	Salina....	564	Grimsby.	60	250	45	
20	1 S.T.R.	W. C. Patterson..... P. McClung No. 1.....	1,000 ft. N. of S. road..... 50 ft. E. of W. line.....	1925	632	722	Salina....	594 625	Clinton... Grimsby	149	330	67	
20	1 S.T.R.	W. C. Patterson..... A. McClung No. 4.....	2,900 ft. N. of S. road..... 50 ft. E. of W. line.	1927	639	633	Salina....	610	Grimsby.	350	.....	58	
20	1 S.T.R.	W. C. Patterson..... P. Windecker No. 1.	SE. Corner.....	1925	635	720	Salina....	612	Grimsby.	318	350	65	
20	1 S.T.R.	W. C. Patterson..... P. Windecker No. 3.....	1,600 ft. N. of S. road..... 50 ft. W. of E. line.....	1925	635	716	Salina....	588 620	Clinton... Grimsby.	40 143	340	72	
20	1 S.T.R.	W. C. Patterson..... P. Windecker No. 4.....	2,500 ft. N. of S. road..... 300 ft. W. of E. line.	1927	643	713	Salina....	.....	.....	336	315	57	
20	1 S.T.R.	W. C. Patterson..... T. Doyle No. 1.....	....	1927	.....	723	Salina....	568 587	Clinton... Clinton	336	315	57	
21	1 S.T.R.	Dominion Natural Gas Co.... R. J. Hinds No. 1.....	3,200 ft. S. of N. road..... 250 ft. E. of W. line.	1927	640	711	Salina....	574	Clinton...	314	261	53	
21	1 S.T.R.	R. J. Hinds No. 2.....	1,800 ft. S. of N. road..... 500 ft. W. of E. line.	1927	637	707	Salina....	.....	.....	Dry hole.	.....	51	
21	1 S.T.R.	R. J. Hinds No. 3.....	NW. Corner.....	1927	632	706	Salina....	586 625	Clinton... Grimsby.	53	320	47	Fresh water at 65 ft. Black water at 350 ft.

Wells in North Cayuga Township, Haldimand County — Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
21	1 S.T.R.	R. J. Hinds No. 4	3,150 ft. S. of N. road 100 ft. W. of E. line.	1930	648	720	Salina			Dry hole.		56	Fresh water at 60 ft. Salt water at 335 ft.
22	1 S.T.R.	Grand River Syndicate J. Donley No. 5	1,000 ft. N. of S. road 600 ft. E. of W. line	1936	597	718	Salina	588 647	Clinton Grimsby	122	220	54	Fresh water at 55 ft.
22	1 S.T.R.	Grand River Syndicate J. Donley No. 4	400 ft. N. of S. line 100 ft. E. of W. line.	1936	607	730	Salina			Dry hole.		67	
22	1 S.T.R.	W. C. Patterson Morton Walker No. 1.	NW. Corner	1927	635	707	Salina	572	Clinton	160		70	
22	1 S.T.R.	Morton Walker No. 2		1927		663	Salina			Dry hole.		60	
22	1 S.T.R.	Morton Walker No. 3		1927		774	Salina	587 617	Clinton Grimsby	368	325	62	
22	1 S.T.R.	Morton Walker No. 4		1927		735	Salina	565 605	Clinton Grimsby	260	310	49	
22	1 S.T.R.	W. C. Patterson Miss Doyle No. 1.		1927		704	Salina			Dry hole.		54	
23	1 S.T.R.	Union Gas Co.	1,100 ft. S. of N. road 600 ft. W. of E. line	1927	630	698	Salina	570 605	Clinton Grimsby	70		43	
23	1 S.T.R.	Union Gas Co. No. 65 Benj. Bunn No. 2	NW. Corner	1927	642	700	Salina	570	Clinton	60	280	40	
23	1 S.T.R.	W. C. Patterson A. E. Bowins No. 1		1927		758	Salina	575 633	Clinton Grimsby	180	280	58	
23	1 S.T.R.	A. E. Bowins No. 2		1927		728	Salina	567	Clinton	212	310	41	
23	1 S.T.R.	W. C. Patterson Benj. Bunn No. 3.		1927		730	Salina	571 596	Clinton Grimsby	37 10	293	40	
23	1 S.T.R.	Union Gas Co. No. 67 Benj. Bunn	2,200 ft. S. of N. road 250 ft. W. of E. line.		611								

24	1 S.T.R.	Dominion Natural Gas Co.... J. W. Bunn No. 1.....	3,000 ft. N. of S. road..... 100 ft. W. of E. line.	1926	636	716	Salina....	604	Clinton...	34	307	60	Fresh water at 90 ft. Black water at 350 ft.
24	1 S.T.R.	J. W. Bunn No. 2.....	2,000 ft. S. of N. road..... 75 ft. W. of E. line.	1927	634	698	Salina....	571	Clinton...	305	356	36	Fresh water at 75 ft. Black water at 350 ft.
24	1 S.T.R.	J. W. Bunn No. 3.....	1,100 ft. S. of N. road..... 100 ft. E. of W. line.	1927	636	702	Salina....	.....	.....	73	335	40	Fresh water at 120 ft. Black water at 350 ft.
24	1 S.T.R.	J. W. Bunn No. 4.....	1,800 ft. N. of S. road..... 200 ft. E. of W. line.	1928	625	707	Salina....	592	Clinton...	72	315	44	Fresh water at 46 ft. Salt water at 350 ft.
24	1 S.T.R.	J. W. Bunn No. 5.....	NW. Corner.....	1930	646	708	Salina....	577	Clinton...	76	225	41	Fresh water at 80 ft. Salt water at 350 ft.
24	1 S.T.R.	J. W. Bunn No. 6.....	1,000 ft. S. of N. road..... 50 ft. W. of E. line.	1931	631	696	Salina....	566	Clinton...	46	162	38	Fresh water at 40 ft. Salt water at 350 ft.
25	1 S.T.R.	Dominion Natural Gas Co.... Chas. Bunn No. 1.....	2,500 ft. S. of N. road..... 100 ft. W. of E. line.	1926	642	713	Salina....	601	Clinton...	116	.....	43	Fresh water at 115 ft.
25	1 S.T.R.	Dominion Natural Gas Co.... Wm. Murray No. 1.....	2,900 ft. N. of S. road..... 400 ft. E. of W. line.	1926	625	584	Salina....	570	Clinton...	750	290	37	Fresh water at 80 ft.
26	1 S.T.R.	Dominion Natural Gas Co.... C. and J. Dennis No. 1.....	1,850 ft. S. of N. road..... 50 ft. W. of E. line.....	1926	633	717	Salina....	579 621	Clinton... Grimsby	60	317	45	Fresh water at 100 ft. Black water at 350 ft.
26	1 S.T.R.	Dominion Natural Gas Co.... E. Murray No. 1.....	3,200 ft. S. of N. road..... 650 ft. E. of W. line.	1926	621	715	Salina....	576	Clinton...	230	317	45	Fresh water at 70 and 115 ft. Black water at 480 ft.
27	1 S.T.R.	E. Murray No. 2.....	2,250 ft. S. of N. road..... 500 ft. W. of E. line.....	1926	629	711	Salina....	598 620	Clinton... Grimsby	204	365	43	Fresh water at 65 ft. Black water at 350 ft.
27	1 S.T.R.	E. Murray No. 3.....	700 ft. S. of N. road..... 600 ft. W. of E. line.	1927	624	693	Salina....	.....	.....	Dry hole.	.....	50	Fresh water at 75 ft. Black water at 350 ft.
27	1 S.T.R.	Dominion Natural Gas Co.... Geo. E. Mills No. 1.....	2,350 ft. N. of S. road..... 50 ft. W. of E. line.	1927	616	718	Salina....	.....	.....	Dry hole.	.....	49	Fresh water at 75 and 100 ft. Black water at 350 ft.
27	1 S.T.R.	Dominion Natural Gas Co.... L. Bell No. 1.....	3,000 ft. S. of N. road..... 50 ft. E. of W. line.	1926	626	715	Salina....	585	Clinton...	80	330	38	Fresh water at 70 ft. Black water at 350 ft.
28	1 S.T.R.	Dominion Natural Gas Co.... J. Mehlenbacher No. 1.....	1,800 ft. S. of N. road..... 200 ft. W. of E. line.	1926	617	687	Salina....	.....	.....	Dry hole.	.....	44	Fresh water at 50 ft. Black water at 350 ft.
28	1 S.T.R.	Domestic Gas Co..... Mehlenbacher No. 1.....	1,000 ft. S. of N. road..... 400 ft. E. of W. line.	1935	618	694	Salina....	.....	.....	Dry hole.	.....	54	Fresh water at 44 and 65 ft. Sulphur water at 300 ft.
35	1 S.T.R.	Dominion Natural Gas Co....	.....	.....	.....	822	Onondaga	670 685	Clinton... Grimsby	.....	.....	18	

Wells in North Cayuga Township, Haldimand County — Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
35	1 S.T.R.	W. C. Patterson..... R. West No. 1.....	1,500 ft. S. of N. road..... 700 ft. E. of W. line.	1936	649	690	Salina....	.....	.....	65	325	18	Fresh water at 90 ft. Sulphur water at 318 ft.
35	1 S.T.R.	W. C. Patterson..... A. Hindree No. 1.	SW. Corner.....	1936	678	803	Salina....	.....	.....	.....	.....	6	Small gas well. Fresh water at 15 and 60 ft.
36	1 S.T.R.	W. C. Patterson..... M. Hyland No. 2.....	1,150 ft. S. of N. road..... 1,000 ft. E. of W. road.	1936	662	765	Salina....	.....	.....	100	350	18	Fresh water at 80 ft. Sulphur water at 326 ft.
36	1 S.T.R.	M. Hyland No. 1.....	1,050 ft. S. of N. road..... 100 ft. E. of W. road.	1936	678	782	Salina....	678	Whirlpool	40	325	4	Fresh water at 28 and 60 ft. Sulphur water at 368 ft.
36	1 S.T.R.	W. Hyland.....	3,100 ft. S. of N. road..... 1,150 ft. E. of W. road.	1937	678	789	Salina....	672	Clinton...	100	335	10	Fresh water at 70 ft., rises 10 ft. Sulphur water at 150 and 349 ft.
36	1 S.T.R.	W. C. Patterson..... F. Leavey No. 1.....	1,500 ft. N. of S. road..... 90 ft. W. of E. line.	1937	683	801	Salina....	.....	.....	Dry hole.	.....	11	Fresh water at 60 ft. Sulphur water at 127 and 359 ft.
40	1 S.T.R.	Dominion Natural Gas Co.... Jacob Rider No. 1.....	1,150 ft. N. of S. road..... 350 ft. W. of E. line.	1931	684	821	Onondaga	.....	.....	Dry hole.	.....	25	Fresh water at 58 ft. Black water at 453 ft.
40	1 S.T.R.	Dominion Natural Gas Co.... J. R. Zintel No. 1.	SE. Corner.....	1931	687	829	Onondaga	690 738	Clinton... Grimsby	25	405	17	Fresh water at 47 ft. Black water at 438 ft.
40	1 S.T.R.	Dominion Natural Gas Co.... S. Best No. 1.	NE. Corner.....	1929	688	801	Onondaga	.....	.....	Dry hole.	.....	17	
43	1 S.T.R.	Dominion Natural Gas Co....	SW. Corner.....	.....	705	827	Onondaga	750	Clinton...	.....	.....	12	Show of gas.
46	1 S.T.R.	Dominion Natural Gas Co.... D. Rucheld No. 1.....	2,600 ft. N. of S. road..... 400 ft. E. of W. line.	1928	688	846	Onondaga	.....	.....	Dry hole.	.....	17	Fresh water at 40 ft. Black water at 460 ft.
47	1 S.T.R.	Dominion Natural Gas Co.... R. Kinsley No. 1.....	1,300 ft. N. of S. line..... 300 ft. W. of E. line.	1928	684	844	Onondaga	.....	.....	Dry hole.	.....	29	

51	1 S.T.R.	Nelles Corners Gas Syndicate.	700 ft. S. of N. road..... 500 ft. W. of E. line.	1925	712	896	Onondaga	743	Clinton...	40	400	3	
3	2 S.T.R.	Canboro Gas and Oil Co..... David Rew No. 2.....	1,850 ft. S. of N. road..... 50 ft. E. of W. line.	1925	608	705	Salina....	.....	.....	42	240	60	Sulphur water at 80 ft.
3	2 S.T.R.	Aikens Gas Syndicate..... Gordon Sutor No. 1.....	5,100 ft. S. of N. road..... 300 ft. E. of W. line.....	1932	606	732	Salina....	545 675	Clinton... Whirlpool	37	195	52	Fresh water at 53 ft. Salt water at 300 ft.
3	2 S.T.R.	Gordon Sutor No. 2.....	3,350 ft. S. of N. road..... 200 ft. E. of W. line.	1933	610	742	Salina....	681	Whirlpool	40	200	38	Fresh water at 37 ft. Salt water at 300 ft.
5	2 S.T.R.	Aikens Gas Syndicate..... H. Cribbins No. 1.....	900 ft. N. of S. road..... 550 ft. E. of W. line.	1932	613	695	Salina....	604	Grimsby.	10	255	56	Fresh water at 57 ft. Salt water at 350 ft.
5	2 S.T.R.	H. Cribbins No 2.....	3,000 ft. N. of S. road..... 100 ft. E. of W. line.....	1932	608	742	Salina....	539 671	Clinton... Whirlpool	63	185	48	Fresh water at 45 ft. Salt water at 300 ft.
5	2 S.T.R.	Union Gas Co. No. 168.....	NE. Corner.....	.....	641	.....	.....	.....	.....	.....	.....	.....	
5	2 S.T.R.	Darling Road Gas Syndicate . P. H. Johnson No. 4.....	.....	1922	.....	717	Salina....	.....	.....	59	255	59	
6	2 S.T.R.	Aikens Gas Syndicate..... J. Hill No. 1.....	2,000 ft. N. of S. road..... 100 ft. E. of W. line.	1932	617	714	Salina....	597	.....	20	220	53	Fresh water at 65 ft. Salt water at 350 ft.
6	2 S.T.R.	Darling Road Gas Syndicate. K. Robins No. 5.....	700 ft. S. of N. road..... 100 ft. W. of E. line.	1922	613	710	Salina....	.....	.....	380	265	66	
7	2 S.T.R.	Darling Road Gas Syndicate. Mrs. Moote No. 6.....	700 ft. S. of N. road..... 50 ft. W. of E. line.	1922	617	714	Salina....	.....	.....	29	257	68	
7	2 S.T.R.	Western Ontario Gas Co..... Allan Stevens No. 1.....	3,500 ft. S. of N. road..... 250 ft. W. of E. line.	1934	617	748	Salina....	.....	.....	50	200	67	Fresh water at 70 ft. Salt water at 350 ft.
7	2 S.T.R.	Dunnville Gas Syndicate..... Barker No. 2.....	3,250 ft. S. of N. road..... 100 ft. E. of W. line.....	1936	620	742	Salina....	675 692	Grimsby. Whirlpool	25	220	66	Fresh water at 70 ft. Salt water at 400 ft.
8	2 S.T.R.	Dunnville-Detroit Gas Syndicate. J. A. Haney No. 1.....	3,250 ft. S. of N. road..... 450 ft. E. of W. line.....	1936	619	744	Salina....	553 693	Clinton... Whirlpool	70	340	56	Fresh water at 67 ft., rises 30 ft. Salt water at 400 ft.
10	2 S.T.R.	Dunnville-Detroit Gas Syndicate. Wm. Moodie No. 1.....	2,600 ft. S. of N. road..... 350 ft. E. of W. line.....	1936	624	752	Salina....	593 633	Clinton... Grimsby	.....	285	62	Fresh water at 85 ft. Salt water at 245 ft.
11	2 S.T.R.	M. Coverdale No. 1.....	3,000 ft. S. of N. road..... 50 ft. E. of W. line.	1936	630	766	Salina....	500 520	Lockport.	39	350	56	Fresh water at 60 ft. Salt water at 425 ft.
11	2 S.T.R.	M. Coverdale No. 2.....	2,900 ft. S. of N. road..... 600 ft. W. of E. line.	1936	628	710	Salina....	.....	.....	Dry hole.	.....	57	Fresh water at 62 ft. Salt water at 425 ft.
12	2 S.T.R.	Dunnville-Detroit Gas Syndicate. F. McDonald No. 1.....	3,000 ft. S. of N. road..... 250 ft. E. of W. road.	1936	635	768	Salina....	.....	Clinton... Grimsby Whirlpool	78	260	62	Fresh water at 65 ft. Salt water at 425 ft.

Wells in North Cayuga Township, Haldimand County — Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
12	2 S.T.R.	F. McDonald No. 2	2,300 ft. S. of N. road 1,000 ft. E. of W. road	1936	633	763	Salina	624 708	Grimsby. Whirlpool	40	350	61	Fresh water at 70 ft. Salt water at 425 ft.
12	2 S.T.R.	Grand River Syndicate Biggam No. 1	2,500 ft. N. of S. road 500 ft. E. of W. line	1935	630	765	Salina	636 712	Grimsby. Whirlpool	24	315	58	Fresh water at 58 ft. Salt water at 430 ft.
13	2 S.T.R.	Grand River Syndicate R. McDonald No. 1	2,900 ft. S. of N. road 350 ft. W. of E. line	1935	637	770	Salina	586 718	Clinton... Whirlpool	70	290	49	Fresh water at 60 ft. Salt water at 430 ft.
13	2 S.T.R.	Dominion Natural Gas Co. F. W. A. Williams No. 1.	SE. Corner	1926	624	724	Salina			Dry hole		70	Fresh water at 160 ft. Black water at 365 ft.
14	2 S.T.R.	Dominion Natural Gas Co. I. Burke No. 1	1,200 ft. S. of N. road 600 ft. W. of E. line.	1926	638	722	Salina			Dry hole.		40	Mineral water at 55 ft. Sulphur water at 285 ft.
14	2 S.T.R.	Canfield Gas Syndicate Morris No. 1	3,000 ft. S. of N. road 50 ft. W. of E. line	1935	634	770	Salina	611 626	Clinton... Grimsby	45	260	44	Fresh water at 50 ft. Salt water at 430 ft.
14	2 S.T.R.	Canfield Gas Syndicate A. Burke No. 1	3,000 ft. S. of N. road 400 ft. E. of W. line.	1935	639	770	Salina	591	Clinton...	85	270	49	Fresh water at 50 ft. Salt water at 430 ft.
14	2 S.T.R.	Dominion Natural Gas Co. H. Gifford No. 1	3,300 ft. N. of S. road 100 ft. E. of W. line.	1931	633	745	Salina	641	Grimsby.	22	362	61	Fresh water at 64 ft.
15	2 S.T.R.	Canfield Gas Syndicate M. Murphy No. 1	2,500 ft. S. of N. road 50 ft. W. of E. line.	1935	638	728	Salina			Dry hole.		57	Fresh water at 60 ft. Salt water at 400 ft.
15	2 S.T.R.	Canfield Gas Syndicate M. Murphy No. 2	3,000 ft. S. of N. road 500 ft. W. of E. line.	1934	641	770	Salina	663	Grimsby.	68	285	66	Fresh water at 70 ft. Salt water at 400 ft.
15	2 S.T.R.	Dominion Natural Gas Co. R. Murphy No. 1	2,250 ft. N. of S. road 50 ft. E. of W. line	1931	637	788	Salina	626 736	Clinton...	137	390	68	Fresh water at 69 ft.
16	2 S.T.R.	Canfield Gas Syndicate W. Vickers No. 1		1935		770	Salina	610 640	Clinton... Grimsby	60	270	66	Fresh water at 120 ft.
16	2 S.T.R,	W. Vickers No. 2	3,900 ft. S. of N. road 500 ft. W. of E. line	1935	643	770	Salina	625 665	Clinton... Grimsby.	39	250	65	Fresh water at 85 ft. Salt water at 400 ft.
16	2 S.T.R.	Canfield Gas Syndicate M. Murphy No. 1	2,900 ft. S. of N. road 200 ft. E. of W. road	1934	643	771	Salina	625 665	Clinton... Grimsby.	50		68	Fresh water at 70 ft. Salt water at 400 ft.

16	2 S.T.R.	Grand River Syndicate..... G. F. Topp No. 1.....	2,450 ft. N. of S. road..... 250 ft. W. of E. line.	1932	640	748	Salina....	.....	.....	Dry hole.	.....	70	Fresh water at 80 ft.
16	2 S.T.R.	Dominion Natural Gas Co.... Fred Topp No. 2.	SE. Corner.....	1931	636	752	Salina.... 	618 643 744	Clinton... Grimsby. Whirlpool	2 13 3	305	67	Fresh water at 71 ft. Black water at 310 ft.
17	2 S.T.R.	Fred Topp No. 1.....	1,500 ft. N. of S. road..... 150 ft. W. of E. line.	1931	638	778	Salina....	.....	.....	78	376	69	Fresh water at 72 ft.
17	2 S.T.R.	Fred Topp No. 2.....	650 ft. N. of S. road..... 300 ft. W. of E. line.	1931	637	745	Salina....	.....	.....	68	275	62	Fresh water at 80 ft.
17	2 S.T.R.	Dominion Natural Gas Co.... Jas. Bell No. 1.....	2,850 ft. N. of S. road..... 450 ft. W. of E. line.	1931	641	754	Salina....	.....	.....	Dry hole.	.....	75	Fresh water at 78 ft.
17	2 S.T.R.	Grand River Syndicate..... O. and J. W. Bell No. 1.....	700 ft. N. of S. road..... 400 ft. E. of W. line.....	1932	634	780	Salina....	616 750	Clinton... Whirlpool	75	285	70	Fresh water at 80 ft.
17	2 S.T.R.	O. and J. W. Bell No. 2.....	1,500 ft. N. of S. road..... 50 ft. E. of W. line.	1932	642	749	Salina....	654	Grimsby.	18	225	70	Fresh water at 80 ft.
18	2 S.T.R.	Grand River Syndicate..... L. Bunn No. 1.....	3,700 ft. S. of N. road..... 150 ft. W. of E. line.....	1932	638	757	Salina....	604 734	Clinton... Whirlpool	20	185	70	Fresh water at 80 ft.
19	2 S.T.R.	Dominion Natural Gas Co.... D. Briggs No. 1.....	600 ft. S. of N. road..... 50 ft. E. of W. line.	1927	631	724	Salina....	.....	.....	Dry hole.	.....	62	Fresh water at 65 ft. Black water at 350 ft.
20	2 S.T.R.	Grand River Gas and Oil Syndicate. Wm. Anthony No. 1.....	60 ft. N. of River road. 3,750 ft. S. of N. road.	1939	626	760	Salina....	.....	.....	Dry hole.	.....	57	Fresh water at 20 ft.
21	2 S.T.R.	Union Gas Co. No. 85..... John Bunn No. 1.....	50 ft. S. of N. road..... 500 ft. W. of E. line.	1925	630	723	Salina....	625	Grimsby.	166	340	60	
22	2 S.T.R.	Grand River Syndicate..... J. Donnelly No. 1.....	....	1935	.....	734	Salina....	602 637	Clinton... Grimsby.	20 15	215	56	
22	2 S.T.R.	J. Donnelly No. 2.....	.....	1935	.....	733	Salina....	623	Clinton...	75	215	56	Fresh water at 60 ft.
32	2 S.T.R.	O'Brien and Little..... J. McConnel No. 1.....	500 ft. S. of N. road..... 150 ft. W. of E. road.	1936	592	792	Salina....	.....	.....	Dry hole.	.....	44	Fresh water at 25 ft.
34	2 S.T.R.	Dominion Natural Gas Co.... Alex Hindree No. 1.....	800 ft. S. of N. road .... 50 ft. W. of E. line.	1928	606	771	Onondaga	.....	.....	Dry hole.	.....	17	
34	2 S.T.R.	Alex Hindree No. 2.....	2,300 ft. S. of N. road..... 300 ft. E. of W. line.	1929	631	731	Onondaga	.....	.....	Dry hole.	.....	58	Fresh water at 55 ft. Black water at 450 ft.
35	2 S.T.R.	Dominion Natural Gas Co.... John Leavey No. 1.....	1,100 ft. S. of N. road..... 400 ft. W. of E. line.....	1928	642	772	Onondaga	638 662	Clinton... Clinton	39	368	10	
35	2 S.T.R.	Dominion Natural Gas Co.... N. Mehlenbacher No. 1.	.....	1907	.....	852	Onondaga	744	Grimsby.	.....	.....	22	Show of gas.

Wells in North Cayuga Township, Haldimand County — Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
18	3 S.T.R.	Dominion Natural Gas Co....	1,700 ft. S. of N. road..... 600 ft. W. of E. line.	.....	605	.....	Salina....	.....	.....	78	.....	.....	
36	3 S.T.R.	P. L. Jackson..... Arthur Riley No. 1.	.....	1935	.....	647	Salina....	546 566	Grimsby.	24	200	15	Fresh water at 25 ft.
37	3 S.T.R.	Kohler Gas Co.....	SE. Corner.....	1926	661	828	Salina....	.....	.....	59	370	22	Water at 25 ft.
38	3 S.T.R.	W. C. Patterson..... Roy Kline No. 1.....	520 ft. S. of N. road..... 380 ft. W. of E. line.	1937	671	885	Salina....	.....	.....	Dry hole.	.....	50	Fresh water at 35 and 55 ft. Sulphur water at 100 and 359 ft.
39	3 S.T.R.	Haldimand Gas Syndicate....	SW. Corner.....	.....	659	850	Onondaga	.....	.....	.....	.....	.....	
40	3 S.T.R.	W. C. Patterson..... P. Baucher No. 1.....	25 ft. N. of road— 650 ft. W. of E. line.	1936	655	848	Onondaga	.....	.....	Dry hole.	.....	22	
41	3 S.T.R.	Haldimand Gas Fields Syndicate.	NW. Corner.....	.....	668	.....	Onondaga	.....	.....	Dry hole.	.....	.....	
1	Jones Tract	Dominion Natural Gas Co.... Mrs. Chas. Parsons No. 1.	.....	1907	588	754	Salina....	595	Clinton...	2	.....	40	
3	"	Dominion Natural Gas Co.... Jacob Nablo No. 1.	.....	1907	661	840	.....	.....	.....	Dry hole.	.....	25	
3	"	Dominion Natural Gas Co.... Robt. Eibson No. 1.	.....	1930	654	813	.....	.....	.....	6	.....	15	Fresh water at 104 ft. Black water at 400 ft.
3	"	Robt. Eibson No. 2.....	.....	1931	672	829	Salina....	.....	.....	Dry hole.	.....	20	Fresh water at 114 and 143 ft. Black water at 420 ft.
3	"	Grand River Gas Syndicate.. Thos. Smith No. 1.	.....	1933	628	755	Salina....	.....	.....	Dry hole.	.....	50	Water at 130 ft.
3	"	Thos. Smith No. 2.....	.....	1934	.....	703	Salina....	614 659	Clinton... Grimsby.	36 36	325	60	
4	"	Grand River Gas Syndicate.. Thos. McClung No. 2.....	.....	1934	.....	729	Salina....	609 634	Clinton... Grimsby.	10 19	305	38	Salt water at 110 ft.

4-6	"	Grand River Gas Syndicate R. F. Gifford No. 1		1933	611	745	Salina	648	Grimsby	37	360	52	Water at 110 ft.
4-6	"	R. F. Gifford No. 3		1933	624	733	Salina	641	Grimsby	85	365	58	Water at 75 ft.
4-6	"	R. F. Gifford No. 2		1933		697	Salina			Dry hole.		29	Water at 30 ft.
6	"	Dominion Natural Gas Co. D. Bradt No. 1.		1924	617	780	Salina	625 664 741	Clinton Grimsby. Whirlpool	50 100 14		56	
6	"	Dominion Natural Gas Co. F. H. Bowins No. 1.		1924	599	768	Salina	612 729	Clinton Whirlpool	33	320	53	Abandoned.
6	"	F. H. Bowins No. 2		1924	608	722	Salina	595 627	Clinton Grimsby	33	375	56	
6	"	Grand River Syndicate F. W. Bowins No. 1.		1934		640	Salina			Dry hole.		46	Water at 100 ft.
6	"	F. W. Bowins No. 2		1934		675	Salina	605 628	Clinton Grimsby	50	350	48	Water at 100 ft.
11	"	Grand River Syndicate			635								
11	"	Grand River Syndicate			638								
19	"	Grand River Syndicate			654					Dry hole.			
21	"	W. C. Patterson N. Kohler No. 2	1,850 ft. S. of N. road 850 ft. E. of W. road.	1936	671	882	Onondaga			Dry hole.			
21	"	N. Kohler No. 3	400 ft. N. of S. line 25 ft. W. of E. line.	1936	677	851	Onondaga			Dry hole.		22	Black water at 40 ft.
22	"	Kohler No. 4	1,900 ft. S. of N. road 50 ft. E. of W. road.	1936	670	858	Onondaga			26	400	15	
23	"	N. Kohler No. 1	650 ft. N. of S. road 1,400 ft. W. of E. road	1936	670	864	Onondaga	748 770	Clinton Grimsby	47	440	14	Black water at 120 ft.
23	"	N. Kohler No. 5	500 ft. S. of N. line 450 ft. E. of road.	1937	672	860	Onondaga			100	345	20	Fresh water at 35 ft. Sulphur water at 390 ft.
23	"	N. and F. Kohler No. 6	500 ft. W. of Kohler road 550 ft. SE. of NW. line.	1937	673	848	Onondaga			16	345	24	Fresh water at 70 ft. Sulphur water at 385 ft.
24	"	N. Kohler No. 5	60 ft. E. of Kohler road 425 ft. SE. of NW. line.	1937	675	862	Onondaga			63	350	20	Fresh water at 34 ft. Sulphur water at 390 ft.
25	"	Dominion Natural Gas Co.			673								Show of gas.
?	"	North Cayuga Gas Syndicate. Thos. Glenny No. 1.		1933	610	765	Salina	601 709	Clinton Whirlpool	90	345	38	Fresh water at 70 ft.

Wells in North Cayuga Township, Haldimand County — Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
	Jones Tract	Thos. Glenny No. 2		1933	628	739	Salina	601 627	Clinton... Grimsby	50	355	49	Fresh water at 80 ft.
	"	Thos. Glenny No. 3		1933	626	772	Salina			100	365	47	Fresh water at 80 ft. Salt water at 400 ft.
	"	Thos. Glenny No. 4		1934	633	763	Salina	627 667	Clinton... Grimsby	35	325	53	Fresh water at 55 ft. Salt water at 400 ft.
	"	Thos. Glenny No. 5		1934	641	789	Salina	685 754	Grimsby. Whirlpool	50	325	57	Fresh water at 110 ft. Salt water at 400 ft.
	"	Thos. Glenny No. 6		1935	633	772	Salina			30	325	49	Fresh water at 120 ft. Salt water at 400 ft.
	"	Union Gas Co. No. 180 J. H. Schaffer.		1930	670	869	Onondaga			Dry hole.		26	Sulphur water at 65 ft.
1-2	Huff Tract	North Cayuga Gas Syndicate. J. Glenny No. 1.		1933	629	763	Salina	596 729	Clinton... Whirlpool	90 5	150	60	Fresh water at 90 ft.
1-2	"	J. Glenny No. 2		1933	611	764	Salina	602 634	Clinton... Grimsby	23	260	69	Sulphur water at 100 ft.
1-2	"	J. Glenny No. 3		1934	623	759	Salina	626 666	Clinton... Grimsby	17	250	58	Fresh water at 65 ft. Salt water at 425 ft.
1-2	"	J. Glenny No. 4		1934	603	743	Salina	609 649	Clinton... Grimsby	73	250	51	Fresh water at 65 ft. Salt water at 425 ft.
1-2	"	North Cayuga Gas Syndicate. J. Glenny No. 5.		1934	581	715	Salina			Dry hole.		50	Fresh water at 70 ft. Salt water at 425 ft.
1-2	"	J. Glenny No. 6		1935	601	740	Salina	595 648	Clinton... Grimsby	21	255	49	Fresh water at 51 and 90 ft. Salt water at 425 ft.
1-2	"	J. Glenny No. 7		1935	614	747	Salina	590 720	Clinton... Whirlpool	105	240	48	Fresh water at 110 ft. Salt water at 425 ft.

2	"	North Cayuga Gas Syndicate.	350 ft. W. of E. line.....	1937	613	750	Salina....	593	Clinton...	20	235	54	Fresh water at 77 ft., rose 47 ft.
		J. Glenny No. 9.....	775 ft. N. of River road.	.....	.....	.....	.....	620	Grimsby				
2	"	Western Gas Co..... J. Glenny No. 8.....	1,100 ft. N. of River road. 150 ft. W. of E. line.	1937	611	742	Salina....	627	Clinton...	17	200	48	Fresh water at 50 ft. Salt water at 425 ft.
3	"	Grand River Gas Syndicate.. A. Walton No. 1.....	200 ft. S. of River road.. 100 ft. E. of W. line.	1936	603	745	Salina....	.....	.....	Dry hole.	.....	53	
3	"	Dominion Natural Gas Co.... W. Walton No. 1.	.....	1924	615	731	Salina....	585 629	Clinton... Grimsby.	10 160	340	54	
3	"	Dominion Natural Gas Co.... John Bradt No. 1.	.....	1931	599	737	Salina....	585 718	Clinton... Whirlpool	27	202	54	Fresh water at 72 ft. Salt water at 432 ft.
3	"	Dominion Natural Gas Co.... John Bradt No. 3.	.....	1931	621	745	Salina....	627	Clinton...	85	265	52	Fresh water at 90 ft. Salt water at 440 ft.
3-4	"	Dominion Natural Gas Co.... John Bradt No. 1.	.....	1924	627	741	Salina....	603	Clinton...	30	300	53	
4	"	Dominion Natural Gas Co.... K. Bradt No. 2.	.....	1924	624	742	Salina....	.....	.....	Dry hole.	.....	64	
5	"	Dominion Natural Gas Co.... W. L. Briggs No. 3.	.....	1931	622	740	Salina....	.....	.....	Dry hole.	.....	50	Fresh water at 90 ft. Salt water at 395 ft.
5	"	W. L. Briggs No. 2.....	.....	1924	.....	735	Salina....	600	Clinton...	.....	.....	64	Show of gas.
?	"	W. C. Patterson.....	.....	1934	.....	850	.....	.....	.....	150	500	.....	
1 and 4	Huff and Jones Tract	Grand River Gas Syndicate.. W. Teasdale No. 2.	.....	1932	580	700	Salina....	563 608	Clinton... Grimsby	180	330	36	Water at 37 ft.
1 and 4	"	W. Teasdale No. 3.....	.....	1933	580	711	Salina....	356 373	Guelph... Guelph	50	300	39	Water at 40 ft.
1 and 4	"	W. Teasdale No. 4.....	.....	1933	579	712	Salina....	575	Clinton...	21	300	34	Water at 40 ft.
1 and 4	"	W. Teasdale No. 5.....	.....	1933	581	700	Salina....	604	Grimsby.	73	360	30	Fresh water at 30 ft. Sulphur water at 270 ft.
4	"	Grand River Gas Syndicate.. Thos. McClung No. 1.	.....	1933	616	735	Salina....	610 638	Clinton... Grimsby	150	735	56	Fresh water at 65 ft.
?	"	Grand River Gas Syndicate.. W. Teasdale No. 1.	.....	1932	581	697	Salina....	578 600	Clinton... Grimsby	200	350	28	Fresh water at 31 ft.
4	Stage Road	Oswego Gas Co..... J. Headley No. 1.	.....	1920	.....	650	Salina....	.....	.....	97	225	43	
5	"	J. Headley No. 2.....	.....	1920	.....	650	Salina....	.....	.....	156	225	43	
		C. Rays.....	Village of Cayuga.....	1937	603	725	Salina....	566 689	Clinton... Whirlpool	30	350	38	Fresh water at 47 ft. Sulphur water at 293 ft.

Wells in Oneida Township, Haldimand County

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
42	1	Dominion Natural Gas Co.... Wm. Hindree No. 1.	SW. Corner.....	1930	655	740	Salina....	626 646	Clinton... Grimsby	45	400	61	Fresh water at 65 ft.
42	1	Wm. Hindree No. 2.....	900 ft. N. of S. road..... 50 ft. E. of W. line.	1930	641	715	Salina....	626	Grimsby.	.....	.....	42	Show of gas. Fresh water at 90 ft.
43	1	Dominion Natural Gas Co.... R. T. Jenkins No. 1.	SW. Corner.....	1931	647	730	Salina....	618	Clinton...	43	340	40	Fresh water at 38 and 60 ft.
44	1	Dominion Natural Gas Co.... Geo. E. Best No. 1.	SW. Corner.....	1931	659	746	Salina....	648	Grimsby.	48	350	49	Fresh water at 75 ft.
44	1	Geo. E. Best No. 2.....	1,350 ft. N. of S. road..... 100 ft. W. of E. line.	1931	673	746	Salina....	645	Clinton...	4	.....	47	Fresh water at 47 ft. Salt water at 450 ft.
45	1	Dominion Natural Gas Co.... H. Aussem No. 1.	SW. Corner.....	1931	702	790	Salina....	667	Clinton...	18	250	.....	Fresh water at 90 ft. Salt water at 500 ft.
45	1	H. Aussem No. 2.....	900 ft. N. of S. road..... 50 ft. W. of E. line.....	1931	679	737	Salina....	632 665	Clinton... Grimsby	29	350	67	Fresh water at 95 ft. Salt water at 450 ft.
47	1	Dominion Natural Gas Co.... Wm. Herod No. 1.	NE. Corner.....	1930	718	795	Salina....	.....	.....	Dry hole.	.....	0	Water at 150 ft.
49	1	Dominion Natural Gas Co.... Jas. McMoran No. 1.	NE. Corner.....	1931	701	792	Salina....	660	Clinton...	.....	.....	14	Show of gas. Water at 100 ft.
51	1	Midfield Oil and Gas Co.....	.....	1919	.....	858	Onondaga	697 838	.....	17	240	.....	
53	1	Midfield Oil and Gas Co..... Geo. Clark.	650 ft. N. of S. road..... 90 ft. E. of W. line.	1920	712	876	Onondaga	.....	.....	74	440	11	
53	1	B. Rolston.....	3,350 ft. S. of N. road..... 500 ft. W. of E. line.	1920	714	862	Onondaga	.....	.....	50	.....	7	
53	1	Midfield Oil and Gas Co..... G. Davidson No. 2.....	2,000 ft. S. of N. road..... 550 ft. W. of E. line.....	1936	717	820	Onondaga	712 782	Clinton... Grimsby	15	400	9	Fresh water at 38 ft.

54	1	Midfield Oil and Gas Co..... J. Rowntree No. 1.	SW. Corner.....	1920	705	877	Onondaga	755	Grimsby.	75	420	10	
54	1	Emerald Gas Syndicate..... J. Rowntree No. 1.....	3,200 ft. S. of N. road..... 550 ft. W. of E. line.....	1932	708	834	Onondaga	702 755	Clinton... Grimsby	30	310	8	
54	1	J. Rowntree No. 6.....	2,450 ft. S. of N. road..... 200 ft. E. of W. line.....	1932	711	851	Onondaga	709 818	Clinton... Whirlpool	250	375	4	Fresh water at 25 and 60 ft.
55	1	Emerald Gas Syndicate..... J. Duxbury No. 2.....	3,250 ft. S. of N. road..... 410 ft. W. of E. line.....	1932	705	826	Onondaga	720 743	Clinton... Grimsby	221	335	6	
55	1	J. Duxbury No. 3.....	3,300 ft. S. of N. road..... 250 ft. E. of W. line.	1932	709	833	Onondaga.....	.....	Dry hole.....			7	
55	1	J. Duxbury No. 4.....	2,150 ft. S. of N. road..... 630 ft. W. of E. line.	1932	713	826	Onondaga	740	Grimsby.	45	425	8	
55	1	Emerald Gas Syndicate..... Joseph Awde.....	2,350 ft. N. of S. road..... 150 ft. W. of E. line.	1932	707	827	Onondaga	702	Clinton...	70	.....	7	
56	1	Cyclops Gas Syndicate..... A. Swaze No. 1.....	2,500 ft. N. of S. road..... 50 ft. W. of E. line.	1932	716	830	Onondaga	707	Clinton...	35	415	7	
56	1	A. Swaze No. 2.....	SW. Corner.....	1932	718	848	Onondaga	718 779	Clinton... Grimsby	70	430	5	
56	1	Cyclops Gas Syndicate..... H. Awde No. 3.....	1,300 ft. N. of S. road..... 100 ft. W. of E. line.....	1932	710	831	Onondaga	708 757	Clinton... Grimsby	40	370	10	Fresh water at 45 ft.
56	1	Cyclops Gas Syndicate..... A. Swaze No. 4.....	700 ft. N. of S. road..... 340 ft. W. of E. line.....	1932	714	838	Onondaga	715 750	Clinton... Grimsby	40	415	10	Fresh water at 65 ft.
56	1	A. Swaze No. 1.....	1,500 ft. N. of S. road..... 440 ft. E. of W. line.	1932	718	842	Onondaga	719	Clinton...	78	410	6	Fresh water at 55 ft.
57	1	Mohawk Gas and Oil Syndicate.	100 ft. N. of S. road..... 550 ft. W. of E. line.	.....	719	.....	.....	.....	.....	.....	.....	.....	
16	2	Gasfinders Gas Co..... D. Smith No. 1.....	100 ft. S. of N. road..... 100 ft. W. of E. line.	1935	675	745	Salina....	.....	.....	Dry hole.....		77	Fresh water at 60 ft.
18	2	Gasfinders Gas Co..... W. H. Culver.....	3,450 ft. S. of N. road..... 150 ft. W. of E. line.	1932	727	805	Salina....	.....	.....	Dry hole.....		5	Sulphur water at 95 ft.
18	2	Gasfinders Gas Co..... A. Hunter No. 1.....	750 ft. S. of N. road..... 400 ft. W. of E. road.	1935	681	733	Salina....	.....	.....	Dry hole.....		81	Fresh water at 90 ft. Sulphur water at 125 ft.
19	2	Lynn Valley Gas Syndicate... Walter Stark No. 1.	NW. Corner.....	1933	678	742	Salina....	612	Clinton...	29	385	48	Sulphur water at 95 ft.
19	2	Lynn Valley Gas Syndicate... Walter Stark No. 2.	NE. Corner.....	1934	678	789	Salina....	.....	.....	50	385	80	Fresh water at 60 ft. Black water at 340 ft.

Wells in Oneida Township, Haldimand County

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
42	1	Dominion Natural Gas Co.... Wm. Hindree No. 1.	SW. Corner.....	1930	655	740	Salina....	626 646	Clinton... Grimsby	45	400	61	Fresh water at 65 ft.
42	1	Wm. Hindree No. 2.....	900 ft. N. of S. road..... 50 ft. E. of W. line.	1930	641	715	Salina....	626	Grimsby.	.....	.....	42	Show of gas. Fresh water at 90 ft.
43	1	Dominion Natural Gas Co.... R. T. Jenkins No. 1.	SW. Corner.....	1931	647	730	Salina....	618	Clinton...	43	340	40	Fresh water at 38 and 60 ft.
44	1	Dominion Natural Gas Co.... Geo. E. Best No. 1.	SW. Corner.....	1931	659	746	Salina....	648	Grimsby.	48	350	49	Fresh water at 75 ft.
44	1	Geo. E. Best No. 2.....	1,350 ft. N. of S. road..... 100 ft. W. of E. line.	1931	673	746	Salina....	645	Clinton...	4	.....	47	Fresh water at 47 ft. Salt water at 450 ft.
45	1	Dominion Natural Gas Co.... H. Aussem No. 1.	SW. Corner.....	1931	702	790	Salina....	667	Clinton...	18	250	.....	Fresh water at 90 ft. Salt water at 500 ft.
45	1	H. Aussem No. 2.....	900 ft. N. of S. road..... 50 ft. W. of E. line.....	1931	679	737	Salina....	632 665	Clinton... Grimsby	29	350	67	Fresh water at 95 ft. Salt water at 450 ft.
47	1	Dominion Natural Gas Co.... Wm. Herod No. 1.	NE. Corner.....	1930	718	795	Salina....	.....	.....	Dry hole.	.....	0	Water at 150 ft.
49	1	Dominion Natural Gas Co.... Jas. McMoran No. 1.	NE. Corner.....	1931	701	792	Salina....	660	Clinton...	.....	.....	14	Show of gas. Water at 100 ft.
51	1	Midfield Oil and Gas Co.....	.....	1919	.....	858	Onondaga	697 838	.....	17	240	.....	
53	1	Midfield Oil and Gas Co..... Geo. Clark.	650 ft. N. of S. road..... 90 ft. E. of W. line.	1920	712	876	Onondaga	.....	.....	74	440	11	
53	1	B. Rolston.....	3,350 ft. S. of N. road..... 500 ft. W. of E. line.	1920	714	862	Onondaga	.....	.....	50	.....	7	
53	1	Midfield Oil and Gas Co..... G. Davidson No. 2.....	2,000 ft. S. of N. road..... 550 ft. W. of E. line.....	1936	717	820	Onondaga	712 782	Clinton... Grimsby	15	400	9	Fresh water at 38 ft.

54	1	Midfield Oil and Gas Co..... J. Rowntree No. 1.	SW. Corner.....	1920	705	877	Onondaga	755	Grimsby.	75	420	10	
54	1	Emerald Gas Syndicate..... J. Rowntree No. 1.....	3,200 ft. S. of N. road..... 550 ft. W. of E. line.....	1932	708	834	Onondaga	702 755	Clinton... Grimsby	30	310	8	
54	1	J. Rowntree No. 6.....	2,450 ft. S. of N. road..... 200 ft. E. of W. line.....	1932	711	851	Onondaga	709 818	Clinton... Whirlpool	250	375	4	Fresh water at 25 and 60 ft.
55	1	Emerald Gas Syndicate..... J. Duxbury No. 2.....	3,250 ft. S. of N. road..... 410 ft. W. of E. line.....	1932	705	826	Onondaga	720 743	Clinton... Grimsby	221	335	6	
55	1	J. Duxbury No. 3.....	3,300 ft. S. of N. road..... 250 ft. E. of W. line.	1932	709	833	Onondaga.....	.....	Dry hole.	.....	7		
55	1	J. Duxbury No. 4.....	2,150 ft. S. of N. road..... 630 ft. W. of E. line.	1932	713	826	Onondaga	740	Grimsby.	45	425	8	
55	1	Emerald Gas Syndicate..... Joseph Awde.....	2,350 ft. N. of S. road..... 150 ft. W. of E. line.	1932	707	827	Onondaga	702	Clinton...	70	.....	7	
56	1	Cyclops Gas Syndicate..... A. Swaze No. 1.....	2,500 ft. N. of S. road..... 50 ft. W. of E. line.	1932	716	830	Onondaga	707	Clinton...	35	415	7	
56	1	A. Swaze No. 2.....	SW. Corner.....	1932	718	848	Onondaga	718 779	Clinton... Grimsby	70	430	5	
56	1	Cyclops Gas Syndicate..... H. Awde No. 3.....	1,300 ft. N. of S. road..... 100 ft. W. of E. line.....	1932	710	831	Onondaga	708 757	Clinton... Grimsby	40	370	10	Fresh water at 45 ft.
56	1	Cyclops Gas Syndicate..... A. Swaze No. 4.....	700 ft. N. of S. road..... 340 ft. W. of E. line.....	1932	714	838	Onondaga	715 750	Clinton... Grimsby	40	415	10	Fresh water at 65 ft.
56	1	A. Swaze No. 1.....	1,500 ft. N. of S. road..... 440 ft. E. of W. line.	1932	718	842	Onondaga	719	Clinton...	78	410	6	Fresh water at 55 ft.
57	1	Mohawk Gas and Oil Syndicate.	100 ft. N. of S. road..... 550 ft. W. of E. line.	.....	719	.....	.....	.....	.....	.....	.....	.....	
16	2	Gasfinders Gas Co..... D. Smith No. 1.....	100 ft. S. of N. road..... 100 ft. W. of E. line.	1935	675	745	Salina....	.....	.....	Dry hole.	.....	77	Fresh water at 60 ft.
18	2	Gasfinders Gas Co..... W. H. Culver.....	3,450 ft. S. of N. road..... 150 ft. W. of E. line.	1932	727	805	Salina....	.....	.....	Dry hole.	.....	5	Sulphur water at 95 ft.
18	2	Gasfinders Gas Co..... A. Hunter No. 1.....	750 ft. S. of N. road..... 400 ft. W. of E. road.	1935	681	733	Salina....	.....	.....	Dry hole.	.....	81	Fresh water at 90 ft. Sulphur water at 125 ft.
19	2	Lynn Valley Gas Syndicate... Walter Stark No. 1.	NW. Corner.....	1933	678	742	Salina....	612	Clinton...	29	385	48	Sulphur water at 95 ft.
19	2	Lynn Valley Gas Syndicate... Walter Stark No. 2.	NE. Corner.....	1934	678	789	Salina....	.....	.....	50	385	80	Fresh water at 60 ft. Black water at 340 ft.

Wells in Oneida Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield M.f.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
19	2	Lynn Valley Gas Syndicate... Walter Stark No. 1.	.....	1935	.....	750	Salina....	.....	.....	Dry hole.	.....	70	Fresh water at 90 ft.
20	2	Lynn Valley Gas Syndicate... W. Cosser No. 2.....	900 ft. S. of N. road..... 50 ft. W. of E. line.	1934	704	814	Salina....	.....	.....	25	300	7	Water at 80 ft.
20	2	W. Cosser No. 3.....	150 ft. S. of N. road..... 630 ft. W. of E. line.....	1934	685	802	Salina....	641 760	Clinton... Whirlpool	70	.....	80	Fresh water at 60 ft.
21	2	Lynn Valley Gas Syndicate... David Hunter No. 1.....	50 ft. S. of N. road..... 500 ft. E. of W. line.	1934	706	812	Salina....	658	Clinton...	50	300	88	Fresh water at 84 ft. Black water at 358 ft.
21	2	David Hunter No. 2.....	NE. Corner.....	1934	705	815	Salina....	.....	.....	175	340	91	Fresh water at 80 ft. Black water at 520 ft.
21	2	David Hunter No. 3.....	950 ft. S. of N. road..... 100 ft. W. of E. line.	1934	719	796	Salina....	.....	.....	.....	.....	125	Fresh water at 85 ft. Black water at 380 ft.
21	2	David Hunter No. 4.....	500 ft. S. of N. road..... 50 ft. W. of E. line.	1934	715	803	Salina....	.....	.....	Dry hole.	.....	5	Fresh water at 82 ft. Black water at 140 ft.
21	2	David Hunter No. 5.....	500 ft. S. of N. road..... 500 ft. W. of E. line.....	1934	714	811	Salina....	670 775	Clinton... Whirlpool	35	300	4	Fresh water at 80 ft. Black water at 375 ft.
14	3	R. B. Pope..... D. J. Smith.....	350 ft. N. of S. road..... 500 ft. E. of W. line.	1933	690	740	Salina....	.....	.....	Dry hole.	.....	56	Sulphur water at 70 ft.
14	3	D. Smith No. 1.....	SW. Corner.....	1933	.....	743	Salina....	.....	.....	Dry hole.	.....	56	Sulphur water at 70 ft.
19	3	Lynn Valley Gas Syndicate...	150 ft. N. of S. road..... 800 ft. E. of W. line.	1935	678	750	Salina....	.....	.....	Dry hole.	.....	40	Fresh water at 90 ft.
19	3	Lynn Valley Gas Syndicate...	500 ft. N. of S. road..... 100 ft. E. of W. line.	1935	673	750	Salina....	.....	.....	Dry hole.	.....	70	
19	3	Melrose Gas and Oil Syndicate John Smith No. 1.....	3,550 ft. N. of S. road..... 200 ft. E. of W. line.....	1932	665	808	Salina....	595 741	Clinton... Whirlpool	45	315	42	Fresh water at 125 ft. Sulphur water at 320 ft.
19	3	John Smith No. 2.....	1,400 ft. S. of N. road..... 200 ft. E. of W. line.	1933	660	745	Salina....	.....	.....	Dry hole.	.....	48	Fresh water at 95 ft. Sulphur water at 300 ft.

20	3	Dominion Natural Gas Co.... W. Hughson No. 1.....	150 ft. S. of N. road..... 500 ft. E. of W. line.....	1931	648	740	Salina....	581 686	Clinton... Whirlpool	21	295	35	Fresh water at 20 and 60 ft.
21	3	River Valley Gas Syndicate.. C. Gailing No. 1.....	500 ft. N. of S. road..... 900 ft. E. of W. line.....	1935	699	795	Salina....	655 755	Clinton... Whirlpool	150	350	12	Fresh water at 97 ft. Black water at 200 ft.
21	3	C. Gailing No. 2.....	500 ft. N. of S. road..... 200 ft. E. of W. line.	1936	688	776	Salina....	649	Clinton...	17	285	80	Fresh water at 87 ft.
22	3	River Valley Gas Syndicate.. Smith No. 1.....	SW. Corner.....	1933	705	817	Salina....	668 780	Clinton... Whirlpool	70	310	15	Fresh water at 77 ft. Black water at 140 ft.
22	3	Smith No. 2.....	SE. Corner.....	1935	702	785	Salina....	.....	.....	Dry hole.	.....	12	Fresh water at 77 ft. Black water at 140 ft.
22	3	Smith No. 3.....	800 ft. N. of S. road..... 650 ft. E. of W. line.	1935	723	792	Salina....	.....	.....	Dry hole.	.....	6	Fresh water at 93 ft.
23	3	Dominion Natural Gas Co.... J. Stark No. 1.....	1,550 ft. N. of S. road..... 520 ft. W. of E. line.	1925	721	794	Salina....	.....	.....	Dry hole.	.....	16	
23	3	River Valley Gas Syndicate.. J. Stark No. 1.....	100 ft. N. of S. road..... 950 ft. W. of E. line.	1935	703	786	Salina....	675	Clinton...	12	300	7	Fresh water at 77 ft. Black water at 136 ft.
24	3	Dominion Natural Gas Co.... W. S. Dunnet No. 1.....	1,600 ft. N. of S. road..... 450 ft. W. of E. line.	1924	727	800	Salina....	677	Clinton...	46	.....	8	
24	3	Dominion Natural Gas Co.... W. S. Dunnet No. 2.....	2,700 ft. N. of S. road..... 200 ft. E. of W. line.	1924	710	766	Salina....	.....	.....	Dry hole.	.....	8	
26	3	Dominion Natural Gas Co.... Wm. E. Dry No. 1.....	1,500 ft. N. of S. road..... 80 ft. E. of W. line.	1930	703	750	Salina....	610	Clinton...	3	.....	30	
15	4	Consolidated Natural Gas Co. E. Emelser No. 1.	.....	1935	.....	622	Salina....	.....	.....	Dry hole.	.....	39	Fresh water at 55 ft.
19	4	Melrose Gas and Oil Syndicate Thos. James No. 1.....	600 ft. N. of S. road..... 50 ft. E. of W. line.....	1933	684	800	Salina....	589 737	Clinton... Whirlpool	10	.....	53	Fresh water at 130 ft. Sulphur water at 310 ft.
21	4	Dominion Natural Gas Co.... W. G. Williams No. 1.	SE. Corner.....	1931	674	715	Salina....	595	Clinton...	32	300	40	Fresh water at 60 ft.
24	4	Dominion Natural Gas Co.... Jacob Northworthy No. 1..	3,350 ft. N. of S. road..... 50 ft. W. of E. line.	1931	693	721	Salina....	609	Clinton...	8	.....	60	Water at 120 ft.
26	4	C. W. Featherstone..... G. E. Peart No. 1.....	50 ft. N. of S. road..... 500 ft. W. of E. line.	1923	666	719	Salina....	595	Clinton...	9	100	42	
1	5	Petrol Oil and Gas Co..... F. Fishcarrier.....	450 ft. S. of N. road..... 100 ft. E. of W. road.	1937	655	578	Salina....	460	Clinton...	22	235	32	Fresh water at 50 ft., rises 30 ft.
16	5	Consolidated Natural Gas Co. Geo. Ridely No. 1.....	2,100 ft. N. of S. road..... 50 ft. W. of E. line.	1934	638	.....	.....	.....	.....	Dry hole	.....	.....	

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Wells in Oneida Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
16	5	Geo. Ridely No. 2	2,850 ft. S. of N. road..... 200 ft. E. of W. line.....	1934	650	636	Salina....	489 605	Clinton... Whirlpool	50	190	28	
16	5	Geo. Ridely No. 3	2,250 ft. S. of N. road..... 550 ft. E. of W. line.	1935	638	610	Salina....	.....	.....	Dry hole.	.....	28	Fresh water at 40 ft.
16	5	Geo. Ridely No. 4	1,400 ft. S. of N. road..... 50 ft. E. of W. line.	1935	641	606	Salina....	502	Clinton...	30	160	10	Fresh water at 35 ft.
16	5	Geo. Ridely No. 5	700 ft. S. of N. road..... 100 ft. E. of W. line.	1935	656	612	Salina....	502	Clinton...	19	160	28	Fresh water at 35 ft.
16	5	W. H. Culver, jr..... Geo. Ridely No. 1.....	2,300 ft. N. of S. road..... 500 ft. E. of W. line.	1932	622	597	Salina....	471	Clinton...	53	250	4	Sulphur water at 35 ft.
17	5	W. H. Culver, jr..... P. LaFortune No. 1.....	4,650 ft. N. of S. road..... 600 ft. E. of W. line.....	1931	639	641	Salina....	485 587	Clinton... Whirlpool	25	225	25	Fresh water at 32 ft. Sulphur water at 65 ft.
17	5	P. LaFortune No. 2	3,200 ft. N. of S. road..... 50 ft. E. of W. line.	1931	620	650	Salina....	472	Clinton...	53	250	5	Fresh water at 22 ft.
	5	P. LaFortune No. 3	3,300 ft. N. of S. road..... 350 ft. W. of E. line.....	1934	616	625	Salina....	473 593	Clinton... Whirlpool	30	183	21	Fresh water at 25 ft.
18	5	W. H. Culver..... P. D. Lafortune No. 5.....	1,150 ft. N. of S. road..... 50 ft. W. of E. road.	1936	645	625	Salina....	.....	.....	Dry hole.	.....	39	Fresh water at 45 ft.
18	5	Gasfinders Gas Co..... A. Lang No. 1.....	100 ft. N. of S. road..... 2,150 ft. E. of W. road.	1934	621	581	.....	.....	.....	Dry hole.	.....	40	Fresh water at 38 and 45 ft. Black water at 175 ft.
18	5	W. H. Culver, jr..... P. LaFortune No. 1.	.....	1935	.....	660	Salina....	508	Clinton...	65	245	40	Fresh water at 50 ft.
18	5	P. LaFortune No. 2	1,000 ft. N. of S. road..... 50 ft. E. of W. line.	1935	665	647	Salina....	.....	.....	Dry hole.	.....	50	
18	5	P. LaFortune.....	1,900 ft. N. of S. road..... 50 ft. W. of E. line.	1935	670	644	Salina....	.....	.....	Dry hole.	.....	60	

18	5	P. LaFortune No. 4	2,000 ft. N. of S. road..... 50 ft. E. of W. line.....	1935	660	641	Salina....	499 620	Clinton,.. Whirlpool	6 5	225	30	Fresh water at 40 ft.
18	5	Gasfinders Gas Co..... A. T. Lang No. 2.....	650 ft. N. of S. road..... 2,900 ft. E. of W. road.	.....	612	583	Salina....	.....	.....	Dry hole.	.....	38	Fresh water at 55 ft. Sulphur water at 95 ft. Black water at 300 ft.
1	6	Petrol Oil and Gas Co. No. 54	NW. Corner.....	1931	685	637	Salina....	465	Clinton...	26	210	43	
1	6	N. Crawford.....	1,300 ft. N. of S. road..... 100 ft. E. of W. road.....	1937	646	612	Salina....	440 550	Clinton... Whirlpool	41 130	250	8	Fresh water at 30 ft.
1	6	Petrol Oil and Gas Co., No. 83 N. Crawford.....	1,250 ft. E. of W. road..... 1,900 ft. N. of S. road.	1939	644	565	Salina....	436	Clinton...	38	.....	18	Fresh water at 19 ft., rises to surface.
15	6	Consolidated Natural Gas Co. Smelser No. 1.....	100 ft. N. of S. road..... 1,400 ft. W. of E. road.	1936	651	.....	Salina....	.....	.....	Dry hole.	.....	.....	
15	6	Consolidated Natural Gas Co. Smelser No. 2.....	200 ft. N. of S. road..... 2,500 ft. W. of E. road.	1936	659	627	Salina....	508	Clinton...	10	155	39	Fresh water at 46 ft.
1	R.R.	Petrol Gas and Oil Co. No. 55	1,850 ft. N. of S. line..... 250 ft. E. of W. line.....	1931	667	617	Salina....	445 558	Clinton... Whirlpool	38	200	58	
1	R.R.	Petrol Gas and Oil Co. No. 67	.....	1934	.....	602	Salina....	435 545	Clinton... Whirlpool	33	195	.....	
1	R.R.	Petrol Gas and Oil Co. No. 68	.....	1934	.....	602	Salina....	439 548	Clinton... Whirlpool	41	190	.....	
3	R.R.	Petrol Oil and Gas Co..... C. Johnson.....	50 ft. N. of S. road..... 1,400 ft. W. of E. road.	1936	692	600	Salina....	489	Clinton...	36	195	35	
2	W.R.	Dominion Natural Gas Co.... James Shaw No. 1.	.....	1931	650	575	Salina....	448 482	Clinton... Grimsby	18	186	45	Water at 55 and 115 ft.
3	W.R.	Dominion Natural Gas Co.... J. Nicholas No. 1.	.....	1931	650	575	Salina....	449	Clinton...	33	225	40	Fresh water at 52 ft.
4	E.R.	Dominion Natural Gas Co.... F. Wickett No. 1.	.....	1931	637	616	Salina....	449 563	Clinton... Whirlpool	22	225	42	Water at 49, 95, and 105 ft.
36	B.F.	Dominion Natural Gas Co.... James Yule No. 1.	.....	1930	654	611	Salina....	481 604	Clinton... Whirlpool	.....	.....	49	Show of gas. Water at 295 ft.
37	B.F.	Peter Yule No. 2.....	.....	1930	638	594	Salina....	470	Clinton...	11	198	41	Fresh water at 43 ft.
39	B.F.	Dominion Natural Gas Co.... J. W. Smith No. 1.	.....	1931	614	587	Salina....	459 571	Clinton... Whirlpool	14	195	15	Fresh water at 15 and 65 ft.
39	B.F.	J. W. Smith No. 2.....	.....	1931	616	591	Salina....	463 584	Clinton... Whirlpool	.....	.....	27	Show of gas. Fresh water at 28 ft.

Wells in Oneida Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
?	B.F.	Dominion Natural Gas Co....	.....	1931	624	582	Salina....	456 577	Clinton... Whirlpool	11	.....	.....	
?	B.F.	Dominion Natural Gas Co....	.....	1931	662	634	Salina....	513	Clinton...	16	250	.....	
58	R.R.	.....	.....	1922	601	643	Salina....	465	Clinton...	58	270	44	
58	R.R.	.....	.....	1921	665	713	Salina....	543	Clinton...	18	260	46	
59-60	R.R.	A. Donaldson No. 1.....	.....	1921	632	687	Salina....	503 636	Clinton... Whirlpool	97	305	57	
59-60	R.R.	.....	.....	1921	632	640	Salina....	.....	.....	97	305	.....	
61	R.R.	Dominion Natural Gas Co.... J. F. Martindale No. 1.	.....	1920	622	697	Salina....	.....	.....	111	250	67	
61	R.R.	J. F. Martindale No. 2.....	.....	1922	621	644	Salina....	493	Clinton...	60	235	56	
62	R.R.	R. E. Martindale No. 1.....	.....	1921	619	680	Salina....	508 625	Clinton... Whirlpool	105	345	48	
62	R.R.	R. E. Martindale No. 2.....	.....	1922	638	663	Salina....	531	Clinton...	395	.....	59	
62	R.R.	R. E. Martindale No. 3.....	.....	1922	634	702	Salina....	.....	.....	272	320	61	
62	R.R.	R. E. Martindale No. 4.....	.....	1923	621	634	Salina....	531 630	Clinton... Whirlpool	78	330	48	
62	R.R.	R. E. Martindale No. 5.....	.....	1922	629	663	Salina....	.....	.....	Dry hole.	.....	47	
64	R.R.	C. W. Featherstone..... Thompson No. 1.	.....	.....	623	695	Salina....	510 640	Clinton... Whirlpool	88	310	56	
64	R.R.	J. and E. P. Thompson No. 2.	.....	1922	640	666	Salina....	529	Clinton...	37	180	57	
64	R.R.	J. and E. P. Thompson No. 3.	.....	1922	630	662	Salina....	526	Clinton...	231	280	55	
65	R.R.	N. Bell No. 1.....	.....	1921	592	670	Salina....	487 515	Clinton... Grimsby	171	.....	25	

65	R.R.	N. Bell No. 2		1922	600	625	Salina			Dry hole		32	
65	R.R.	N. Bell No. 3		1923	611	655	Salina	489	Clinton	58	185	37	
68	R.R.	Dominion Natural Gas Co. W. Graham No. 1.		1920	613	685	Salina			85	250	18	
68	R.R.	W. Graham No. 2		1923	585	660	Salina	491 603	Clinton Whirlpool	34	188	24	
68	R.R.	W. Graham No. 3		1923	625	660	Salina	530	Clinton	7	230	49	
71	R.R.	C. W. Featherstone Wm. Bell.		1921	593	690	Salina			37	270	28	
73	R.R.	C. W. Featherstone		1921	590	668	Salina	522 540	Clinton Grimsby	111	240	24	
75	R.R.	P. L. Jackson G. Ferguson No. 1.		1935	603	663	Salina			Dry hole		12	Fresh water at 38 ft.
75	R.R.	P. L. Jackson G. Ferguson No. 2.		1935	591	641	Salina	515	Clinton	25	200	25	Fresh water at 40 ft. Sulphur water at 150 ft.
76	R.R.	Dominion Natural Gas Co. Young.		1922	599	662	Salina	518	Clinton	45	265	34	
77	R.R.	P. L. Jackson I. Ferguson No. 1.		1935	616	760	Salina	542	Clinton	55	200	42	Fresh water at 60 ft.
	Anderson Tract	York Gas Syndicate		1935	622								
	"	York Gas Syndicate		1935	640					Dry hole			
	"	York Natural Gas Syndicate O. Peart No. 1.		1935		593	Salina	487 492	Clinton Grimsby	60		25	Fresh water at 58 ft.
	"	York Natural Gas Syndicate B. Pettit No. 1.		1935		622	Salina			30	190	40	Fresh water at 50 ft.
	"	B. Pettit No. 2		1935		585	Salina					37	Show of gas. Fresh water at 32 ft.
	"	B. Pettit No. 3		1935		605	Salina	473	Clinton	20	200	60	Fresh water at 75 ft.
	"	York Natural Gas Syndicate O. Peart No. 2.		1935		614	Salina			Dry hole		25	Fresh water at 60 ft.
77	R.R.	F. O. Tanner I. Ferguson No. 2	95 ft. W. of E. road 520 ft. N. of S. road.	1937	627	711	Salina	576	Clinton	65	240	44	Fresh water at 50 ft. Sulphur water at 90 ft. Black water at 230 ft.

Wells in South Cayuga Township, Haldimand County

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
19	3	Dominion Natural Gas Co....	.....	.....	605	816	Salina....	672 705	Clinton... Grimsby	.....	.....	62	
21	3	Hendel Gas Co. No. 1.....	.....	1914	.....	765	Salina....	646 670	Clinton... Grimsby	336	425	50	
21	3	Hendel Gas Co. No. 2.....	.....	1914	.....	760	Salina....	648 680	Clinton... Grimsby	70	400	45	
21	3	Hendel Gas Co. No. 3.....	.....	1914	.....	768	Salina....	640 663	Clinton... Grimsby	210	390	58	
21	3	Hendel Gas Co. No. 4.....	.....	1914	.....	737	Salina....	602 633	Clinton... Grimsby	.....	.....	40	
25	3	South Cayuga Gas Co.....	500 ft. S. of N. road..... 50 ft. E. of W. line.	1927	597	820	Salina....	.....	.....	Dry hole.	.....	40	
29	3	Dufferin Gas Syndicate..... Wilson No. 1.....	50 ft. N. of S. road..... 2,400 ft. W. of E. road.	1936	665	830	Salina....	.....	.....	Dry hole.	.....	12	Fresh water at 15 ft.
6	4	W. C. Patterson.....	50 ft. N. of S. road..... 600 ft. W. of E. line.	1927	589	722	Salina....	.....	.....	Dry hole.	.....	.....	
7	4	Union Gas Co. No. 120.....	50 ft. N. of S. road..... 500 ft. E. of W. line.	1925	609	843	Salina....	.....	.....	65	275	85	
8	4	Union Gas Co. No. 116.....	500 ft. N. of S. road..... 500 ft. W. of E. line.	1925	611	843	Salina....	.....	.....	50	275	70	
8	4	Union Gas Co. No. 115.....	500 ft. N. of S. road..... 800 ft. W. of E. line.....	1925	590	757	Salina....	585 711	Clinton... Whirlpool	35	275	64	
10	4	Union Gas Co. No. 117.....	SE. Corner.....	1925	619	790	Salina....	647 737	?	40	275	74	
21	4	Hendel Gas Co. No. 5.....	.....	1915	.....	776	Salina....	634	Clinton...	60	.....	80	
21	4	Hendel Gas Co. No. 6.....	.....	1916	.....	779	Salina....	623	Clinton...	.....	.....	.....	
22	4	Rose Valley Gas Syndicate... Pridmore No. 1.....	150 ft. N. of S. road..... 750 ft. W. of E. line.	1935	665	844	Onondaga	733	.....	8	165	19	Fresh water at 92 ft.

23	4	Otterville Gas Syndicate		1934		847						17	Fresh water at 115 ft. Black water at 400 ft.
23	4	South Cayuga Gas Co.		1926	613	803	Salina	650 697	Clinton... Grimsby	45	232		
23	4	South Cayuga Gas Co.		1926	627	785	Salina	650 675	Clinton... Clinton	74	230	80	Fresh water at 70 ft.
24	4	South Cayuga Gas Co.		1926	636	812	Salina	671 731	Clinton... Grimsby	33	235	88	
24	4	South Cayuga Gas Co.		1926	620	805	Salina			27	230	87	Fresh water at 65 ft.
25	4	South Cayuga Gas Co.	3,150 ft. N. of S. road..... 50 ft. E. of W. line.	1927	644	845	Salina			10	225	25	Sulphur water at 70 ft.
25	4	A. E. Meadow and Son No. 1		1926	638	822	Salina			25	225	107	Fresh water at 70 ft.
26	4	Union Gas Co. No. 107	3,000 ft. N. of S. road..... 500 ft. W. of E. line.	1927	648	845	Salina			9	255	24	Sulphur water at 68 ft.
26	4	Union Gas Co. No. 106	2,850 ft. S. of N. road..... 400 ft. E. of W. line.	1927	667	848	Salina			27	365	24	
27	4	Union Gas Co. No. 105	2,500 ft. S. of N. road..... 600 ft. E. of W. line.	1927	662	845	Salina			57	265	17	
28	4	Dufferin Gas Syndicate..... W. Wilson No. 1	2,000 ft. S. of N. road..... 50 ft. W. of E. road.	1935	669	845	Onondaga			Dry hole.		14	Sulphur water at 65 ft.
7	5	W. C. Patterson	850 ft. S. of N. road..... 1,150 ft. E. of W. line.	1925	604	768	Salina			Dry hole.		13	
13	5	Dominion Natural Gas Co.		1911		865	Onondaga	720 848	Clinton... Whirlpool	104	370	13	
22	5	Otterville Gas Syndicate	NE. Corner	1934	658	874	Onondaga	837	Whirlpool	16	220	14	Fresh water at 125 ft. Black water at 420 ft.
19	6	Culp	2,000 ft. S. of N. road..... 50 ft. W. of E. line.	1921	627	3,153	Onondaga			Dry hole.		16	
18	7	Dominion Natural Gas Co.		1910		874	Onondaga	770 857	?	121	495	11	
22	7	Dominion Natural Gas Co.		1907		852	Onondaga		Whirlpool			12	Show of oil in whirlpool sandstone.
20	Fredenburgh Tract	Midwal Gas Syndicate..... A. Gifford No. 1	700 ft. N. of S. road..... 1,100 ft. W. of E. road.	1936	630	738	Salina			Dry hole.		38	Fresh water at 40 ft. Sulphur water at 180 ft.
20	"	A. Gifford No. 2	500 ft. N. of S. road..... 1,100 ft. W. of E. road.	1936	671	765		627 662	Clinton... Grimsby			60	Fresh water at 62 ft. Black water at 195 ft.
20	"	A. Gifford No. 3	50 ft. N. of S. road..... 1,500 ft. W. of E. road.	1936	660	766	Salina	630 651	Clinton... Grimsby			58	Fresh water at 62 ft. Sulphur water at 330 ft.

Wells in South Cayuga Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
22	"	Midwal Gas Syndicate..... J. Fredenburgh No. 1.....	600 ft. N. of S. road..... 3,800 ft. W. of E. road.....	1936	662	755	Salina....	643 682	Clinton... Grimsby	.....	.....	45	Fresh water at 60 ft. Salt water at 565 ft.
22	"	J. Fredenburgh No. 2.....	1,000 ft. N. of S. road..... 4,300 ft. W. of E. road.....	1936	667	753	Salina....	619 645	Clinton... Grimsby	.....	.....	61	Fresh water at 70 ft.
22	"	J. Fredenburgh No. 3.....	1,700 ft. S. of N. road..... 3,500 ft. W. of E. road.	1936	665	763	Salina....	.....	.....	Dry hole.	.....	43	Fresh water at 55 ft. Sulphur water at 160 ft.
22	"	J. Fredenburgh No. 4.....	750 ft. S. of N. road..... 4,150 ft. W. of E. road.....	1936	674	771	Salina....	670 680	Grimsby.	.....	.....	53	Fresh water at 65 ft.
22	"	Canfield Gas Syndicate..... J. Fredenburgh No. 1.....	1,000 ft. N. of S. road..... 3,100 ft. W. of E. road.	1935	649	729	Salina....	.....	.....	Dry hole.	.....	48	Fresh water at 49 ft. Salt water at 400 ft.

Wells in Sherbrooke Township, Haldimand County

5	1	Dominion Natural Gas Co.... Wm. Clark No. 1.....	4,400 ft. S. of N. line..... 650 ft. E. of W. line.	1931	599	941	Onondaga	895	Whirlpool	17	390	19	Fresh water at 19 and 55 ft.
5	1	Dominion Natural Gas Co.... Wm. Clark No. 2.....	2,600 ft. S. of N. road..... 600 ft. E. of W. road.	1931	589	884	Onondaga	.....	.....	Dry hole.	.....	70	
5	1	Dominion Natural Gas Co.... E. Root No. 1.....	3,700 ft. S. of N. road..... 200 ft. W. of E. line.	1931	598	938	Onondaga	878	Whirlpool	87	425	50	Fresh water at 155 and 190 ft. Sulphur water at 475 ft.
7	1	Dominion Natural Gas Co.... Cavanaugh No. 1.....	1,100 ft. S. of N. road..... 700 ft. E. of W. line.	1931	595	874	Onondaga	870	Whirlpool	13	360	40	Fresh water at 60 and 170 ft.
6	1	Dominion Natural Gas Co.... Alex. Lindsay No. 2.....	2,800 ft. S. of N. road..... 50 ft. E. of W. line.....	1930	596	934	Onondaga	752 875	Clinton... Whirlpool	27	370	39	Fresh water at 38 and 80 ft. Sulphur water at 670 ft.
6	1	Dominion Natural Gas Co.... Alex. Lindsay No. 1.....	3,150 ft. S. of N. road..... 250 ft. E. of W. line.....	1930	598	939	Onondaga	775 887	Clinton... Whirlpool	58	400	44	Fresh water at 43 ft.

6	1	Dominion Natural Gas Co.... R. Lockhart.....	1,700 ft. S. of N. road..... 750 ft. E. of W. line.	1931	593	918	Onondaga	865	Whirlpool	41	375	40	Fresh water at 70 ft.
16	1	Sterling Gas Co..... E. J. Farr.....	5,000 ft. S. of N. road..... 100 ft. W. of E. line.	1924	610	982	Onondaga	940	Whirlpool	600	300	25	
17	1	Sterling Gas Co..... E. J. Farr.....	5,700 ft. S. of N. road..... 500 ft. W. of E. line.	1918	608	928	Onondaga	928	Whirlpool	1,000	300	52	
17	1	Sherbrooke Gas Syndicate.... Wm. Bird.....	3,200 ft. S. of N. road..... 100 ft. E. of W. road.	1932	645	944	Onondaga	.....	.....	Dry hole.	.....	34	Sulphur water at 95 ft.
18	1	Sterling Gas Co..... E. J. Farr No. 2.....	5,200 ft. S. of N. road.... 1,800 ft. E. of W. road.	1917	586	925	Onondaga	905	Whirlpool	2,000	385	14	
18	1	Sterling Gas Co..... E. J. Farr.....	5,400 ft. S. of N. road..... 1,400 ft. E. of W. road.	1917	584	935	Onondaga	918	Whirlpool	2,500	385	13	
19	1	Sterling Gas Co..... M. Steele.....	1,500 ft. S. of N. road..... 700 ft. E. of W. line.	1918	595	905	Onondaga	875	Whirlpool	75	350	24	
19	1	Sherbrooke Gas Syndicate.... Tom Farry.....	200 ft. S. of N. road on lake shore.	1932	576	859	Onondaga	.....	.....	Dry hole.	.....	11	Fresh water at 30 ft.
9	2	Dominion Natural Gas Co.... H. King.....	1,000 ft. N. of S. line..... 25 ft. E. of W. line.	1930	592	872	Salina....	.....	.....	.....	.....	71	Abandoned; fresh water at 71 and 80 ft.
8	2	Dominion Natural Gas Co.... G. King.....	900 ft. W. of E. road..... 25 ft. N. of S. road.	1930	582	850	Salina....	.....	.....	Dry hole.	.....	167	Fresh water at 165 and 175 ft.
11	3	Niece and Sons.....	150 ft. N. of S. road..... 650 ft. E. of W. line.	1921	590	895	Onondaga	.....	.....	.....	.....	.....	
11	3	Niece and Sons.....	100 ft. N. of S. road..... 200 ft. E. of W. line.	1923	591	898	Onondaga	713 854	Clinton... Whirlpool	80	.....	28	
12	3	Sterling Gas Co..... H. Dickout.	SE. Corner.....	1921	590	879	Onondaga	634 702	Clinton Whirlpool				

Wells in Seneca Township, Haldimand County

A	1	Hoover and May.....	50 ft. S. of N. road..... 500 ft. E. of W. line.....	1922	620	626	Salina....	450 565	Clinton... Grimsby	15	225	66	
1	1	Central Seneca Gas Syndicate.	.....	1934	.....	533	Salina....	.....	.....	Dry hole.	.....	.....	
4	1	Dominion Natural Gas Co....	.....	1919	.....	566	Salina....	.....	.....	25	.....	.....	
7	1	Dominion Natural Gas Co....	.....	1930	.....	590	Salina....	480	Grimsby.	39	100	54	Water at 52 and 58 ft.

Wells in Seneca Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
8	1	Dominion Natural Gas Co.	.....	1930	.....	625	Salina.	486	Grimsby.	21	126	48	Water at 48 and 55 ft.
9	1	Dominion Natural Gas Co.	50 ft. N. of S. road..... 550 ft. E. of W. line.....	1929	624	671	Salina.	511 620	? Whirlpool	15 15	190	35	Fresh water at 35 and 40 ft. Salt water at 280 ft.
11	1	Dominion Natural Gas Co.	NW. Corner.....	1921	636	507	Salina.	.....	.....	Dry hole.	.....	62	
15	1	Dominion Natural Gas Co.	.....	1930	.....	630	Salina.	.....	.....	Dry hole.	.....	.....	
16	1	Dominion Natural Gas Co.	1,150 ft. S. of N. road..... 50 ft. W. of E. line.	1922	643	628	Salina.	.....	.....	Dry hole.	.....	60	
18	1	Dominion Natural Gas Co.	3,250 ft. S. of N. road..... 300 ft. W. of E. line.....	1928	647	638	Salina.	514 553	Clinton... Grimsby	10	.....	60	
18	1	Dominion Natural Gas Co.	5,600 ft. N. of S. road..... 100 ft. E. of W. line.	1929	650	685	Salina.	629	Whirlpool	17	190	80	Water at 80 and 85 ft.
18	1	Dominion Natural Gas Co.	2,100 ft. S. of N. road..... 50 ft. W. of E. line.	1929	642	639	Salina.	.....	.....	Dry hole.	.....	68	Water at 75 and 85 ft.
19	1	Dominion Natural Gas Co.	50 ft. S. of Centre road. 50 ft. W. of E. line.	1928	642	672	Salina.	618	Whirlpool	80	180	72	Spring water at 85 ft.
21	1	Pt. Colbourne and Welland Gas and Oil Co. No. 1.	5,000 ft. N. of S. road..... 50 ft. E. of W. line.	1927	653	706	Salina.	.....	.....	270	270	63	
21	1	Pt. Colbourne and Welland Gas and Oil Co. No. 2.	3,600 ft. N. of S. road..... 50 ft. E. of W. line.	1927	654	706	Salina.	.....	.....	120	220	54	
23	1	Pt. Colbourne and Welland Gas and Oil Co. No. 3.	NE. Corner.....	1927	658	702	Salina.	250	Guelph...	40	250	62	
24	1	Pt. Colbourne and Welland Gas and Oil Co.	.....	1927	.....	685	Salina.	.....	.....	Dry hole.	.....	60	
25	1	Rainham Gas Syndicate No. 3	1,400 ft. S. of N. road..... 50 ft. E. of W. line.	.....	656	.....	.....	.....	.....	.....	.....	.....	

25	1	Rainham Gas Syndicate No. 4	3,000 ft. S. of N. road..... 100 ft. E. of W. line.....	1933	654	672	Salina....	538 566	Clinton... Grimsby	50	.....	77	Fresh water at 80 ft.
25	1	Rainham Gas Syndicate No. 5	1,000 ft. S. of N. road..... 300 ft. W. of E. line.	1932	659	660	Salina....	527	Clinton...	125	105	89	Fresh water at 105 ft.
25	1	Rainham Gas Syndicate No. 6	.....	1932	.....	663	Salina....	522	Clinton...	92	105	89	Fresh water at 105 ft.
C	2	Newcastle Oil and Mining Co. No. 4.	1,100 ft. N. of S. road..... 200 ft. E. of W. line.	1932	613	586	Salina....	.....	.....	4	115	38	Fresh water at 50 ft. Salt water at 309 ft.
B	2	Newcastle Oil and Mining Co. No. 1.	900 ft. N. of S. road..... 500 ft. W. of E. line.....	1931	622	625	Salina....	430 558	Clinton... Whirlpool	35	.....	62	Fresh water at 70 ft. Black water at 110 ft.
B	2	Dominion Natural Gas Co....	.....	1920	.....	549	Salina....	.....	.....	34	.....	.....	
A	2	Canboro Gas and Oil Co.....	.....	1924	.....	541	Salina....	.....	.....	Dry hole.	.....	54	Sulphur water at 70 ft.
1	2	Canboro Gas and Oil Co.....	900 ft. N. of S. road..... 400 ft. E. of W. line.	1932	619	580	Salina....	.....	.....	59	225	48	
2	2	Canboro Gas and Oil Co. No. 1	NE. Corner.....	1924	627	579	Salina....	459	Grimsby.	10	.....	54	
2	2	Canboro Gas and Oil Co. No. 5	2,450 ft. S. of N. road..... 50 ft. W. of E. line.....	1924	624	575	Salina....	420 535	..... Whirlpool	 3,000	 125	 51	
3	2	Canboro Gas and Oil Co. No. 2	1,350 ft. S. of N. road..... 300 ft. E. of W. line.	1924	638	581	Salina....	537	Whirlpool	870	125	56	Sulphur water at 70 ft.
3	2	Canboro Gas and Oil Co. No. 3	2,400 ft. S. of N. road..... 250 ft. E. of W. line.....	1924	622	575	Salina....	450 535	Grimsby. Whirlpool	500	125	47	Sulphur water at 70 ft.
3	2	Canboro Gas and Oil Co. No. 4	2,100 ft. S. of N. road..... 50 ft. W. of E. line.	1924	616	574	Salina....	526	Whirlpool	784	125	49	
3	2	?	3,400 ft. S. of N. road..... 300 ft. W. of E. line.	1921	618	595	Salina....	.....	.....	29	.....	48	
4	2	Dominion Natural Gas Co....	3,150 ft. S. of N. road..... 350 ft. W. of E. line.....	1928	612	544	Salina....	406 440	Clinton... Grimsby	52	175	36	
4	2	Dominion Natural Gas Co....	2,000 ft. S. of N. road..... 300 ft. E. of W. line.	1928	625	598	Salina....	.....	.....	Dry hole.	.....	45	Fresh water at 45 ft. Salt water at 200 ft.
4	2	?	SE. Corner.....	1921	607	600	Salina....	.....	.....	29	215	38	
6	2	Dominion Natural Gas Co....	SW. Corner.....	1930	630	610	Salina....	442 556	Clinton... Whirlpool	29	.....	41	Fresh water at 40 and 90 ft.
6	2	Newcastle Oil and Mining Co No. 2.	.....	1931	.....	620	Salina....	463 561	Grimsby. Whirlpool	20	85	58	Water at 75 and 125 ft.

Wells in Seneca Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
10	2	Dominion Natural Gas Co....	SW. Corner.....	1929	628	591	Salina....	477	Clinton...	26	188	52	
10	2	Dominion Natural Gas Co....	2,050 ft. N. of S. road..... 400 ft. E. of W. line.....	1929	638	593	Salina....	501 587	Grimsby. Whirlpool	1 11	.....	65	Abandoned.
16	2	National Gas Syndicate No. 1	.....	1934	.....	635	Salina....	459 593	Clinton... Whirlpool	26	160	66	Fresh water at 69 ft.
16	2	National Gas Syndicate No. 2	T. Singer farm.....	1935	.....	630	Salina....	470 590	Clinton... Whirlpool	15	125	90	Fresh water at 94 ft.
18	2	Dominion Natural Gas Co....	1,500 ft. N. of S. road..... 400 ft. W. of E. line.....	1929	635	613	Salina....	436 486	.....	2	.....	85	Fresh water at 80 and 90 ft.
10	3	Dominion Natural Gas Co....	.....	1930	.....	611	Salina....	.....	.....	Dry hole.	.....	80	Water at 76 and 95 ft.
12	3	Hoover and May.....	.....	1925	.....	553	Salina....	425	Clinton...	.....	.....	64	Sulphur water at 80 ft.
14	3	National Gas Syndicate No. 1	.....	1934	.....	635	Salina....	470 589	Clinton... Whirlpool	15 27	175	89	Fresh water at 93 ft.
14	3	National Gas Syndicate No. 2	M. Shaw farm.....	1935	.....	616	Salina....	493 580	Grimsby. Whirlpool	15	125	76	Fresh water at 80 ft.
15	3	Peninsula Gas Co.....	NW. Corner.....	1932	630	575	Salina....	.....	.....	10	110	49	Fresh water at 56 ft. Salt water at 200 ft.
15	3	Domestic Natural Gas No. 2 .	1,200 ft. S. of N. road..... 400 ft. W. of E. line.	1935	647	587	Salina....	580	Whirlpool	7	110	82	Fresh water at 79 ft.
16	3	Hoover and May.....	NW. Corner.....	1924	628	580	Salina....	430 530	Clinton... Whirlpool	50	208	63	
17	3	Hoover and May.....	NW. Corner.....	1924	641	595	Salina....	545	Whirlpool	49	200	63	
17	3	Domestic Gas Syndicate No. 1	.....	1934	.....	630	Salina....	455 567	Clinton... Whirlpool	80	120	65	Fresh water at 65 ft. Sulphur water at 240 ft.

17	3	Domestic Gas Syndicate No. 2	.....	1934	.....	631	Salina....	564	Whirlpool	110	66		Fresh water at 66 ft. Sulphur water at 240 ft.
3	4	United Gas Co. No. 1	.....	1920	.....	617	Salina....	.....	.....	231	.....	60	
3	4	United Gas Co. No. 2	.....	1920	.....	632	Salina....	.....	.....	45	.....	64	
11	4	Central Seneca Gas Syndicate	NW. Corner.....	1933	644	536	Salina....	.....	Whirlpool	7	95	60	Fresh water at 80 ft.
12	4	Central Seneca Gas Syndicate	1,000 ft. S. of N. road..... 50 ft. E. of W. line.	1933	645	505	Salina....	.....	.....	Dry hole.	.....	55	Fresh water at 70 ft.
13	4	Dominion Natural Gas Co....	1,700 ft. N. of S. road..... 700 ft. W. of E. line.	1928	635	520	Salina....	.....	.....	Dry hole.	.....	49	Spring water at 45 ft. Black water at 180 ft.
13	4	?	.....	1923	.....	547	Salina....	382 493	Clinton... Whirlpool	110	174	54	
13	4	Domestic Gas Syndicate No. 1	W. Tomlinson farm.....	1935	.....	608	Salina....	421 443	Clinton... Grimsby	52	110	57	Fresh water at 63 ft.
13	4	Domestic Gas Syndicate No. 2	900 ft. N. of S. road..... 50 ft. E. of W. line.	1935	635	551	Salina....	.....	.....	Dry hole.	.....	60	Fresh water at 68 ft. Sulphur water at 270 ft.
14	4	Dominion Natural Gas Co....	800 ft. N. of S. road..... 200 ft. E. of W. line.....	1928	648	604	Salina....	427 547	Clinton... Whirlpool	36	148	70	Spring water at 60 ft. Black water at 73 ft.
15	4	Dominion Natural Gas Co....	3,150 ft. N. of S. road..... 200 ft. E. of W. line.....	1928	647	581	Salina....	418 526	Clinton... Whirlpool	10 4	129	55	Spring water at 50 ft. Black water at 65 ft.
16	4	Central Seneca Gas Syndicate No. 1.	NW. Corner.....	1933	654	533	Salina....	.....	Whirlpool	500	95	64	Fresh water at 80 ft.
		Central Seneca Gas Syndicate No. 2.	.....	1934	.....	540	Salina....	506	Whirlpool	40	93	57	Fresh water at 65 ft.
		Domestic Gas Syndicate No. 1	.....	1934	.....	622	Salina....	440 546	Clinton... Whirlpool	100	190	55	Fresh water at 60 ft. Black water at 280 ft.
		Domestic Gas Syndicate No. 2	.....	1934	.....	624	Salina....	455 565	Clinton... Whirlpool	120	120	60	Fresh water at 60 ft. Sulphur water at 175 ft. Black water at 300 ft.
16	4	Domestic Gas Syndicate No. 3	W. J. Cummings farm.....	1935	.....	626	Salina....	440 560	Clinton... Whirlpool	20	110	59	Fresh water at 60 ft.
16	4 E.S.C.R.	Central Seneca Gas Syndicate Harrison No. 2.....	50 ft. S. of N. road..... 25 ft. W. of E. line.	1935	650	550	Salina....	.....	.....	Dry hole.	.....	68	Fresh water at 72 ft.
19	4 E.S.C.R.	Harrison No. 3.....	2,000 ft. S. of N. road..... 150 ft. E. of W. line.	1935	651	591	Salina....	541	Whirlpool	.....	90	75	Fresh water at 78 ft.
17	4 E.S.C.R.	Central Seneca Gas Syndicate No. 2.	50 ft. S. of N. road..... 1,900 ft. W. of E. line.....	1933	650	532	Salina....	409 502	Clinton... Whirlpool	50	95	64	Water at 73 ft.

Wells in Seneca Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
17	4 E.S.C.R.	Central Seneca Gas Syndicate No. 3.	.....	1934	.....	559	Salina....	420 517	Clinton... Whirlpool	240	104	63	Fresh water at 65 ft.
17	4 E.S.C.R.	Central Seneca Gas Syndicate Smiley No. 2.....	1,100 ft. S. of N. road..... 100 ft. W. of E. line.	1935	640	550	Salina....	.....	.....	Dry hole.	.....	68	Fresh water at 72 ft.
17	4 E.S.C.R.	Smiley No. 4.....	350 ft. S. of N. road..... 2,150 ft. E. of W. line.	1935	648	.....	Salina....	.....	.....	.....	.....	.....	
17	4 E.S.C.R.	Smiley No. 5.....	1,900 ft. S. of N. road..... 600 ft. E. of W. line.	1935	658	.....	Salina....	.....	.....	.....	.....	.....	
18	4 E.S.C.R.	Smiley No. 3.....	100 ft. S. of N. road..... 100 ft. W. of E. line.	1935	658	.....	Salina....	.....	.....	.....	.....	.....	
18	4 E.S.C.R.	Smiley No. 6.....	2,000 ft. S. of N. road..... 100 ft. W. of E. line.....	1935	655	573	Salina....	429 530	Clinton... Whirlpool	40	100	79	Fresh water at 83 ft.
18	4 E.S.C.R.	Smiley No. 7.....	550 ft. E. of W. line..... 780 ft. S. of N. road.	1937	643	504	Salina....	.....	.....	Dry hole.	.....	56	
18	4 E.S.C.R.	Central Seneca Gas Syndicate Harrison No. 3.....	1,800 ft. S. of N. road..... 350 ft. E. of W. line.	1935	656	591	Salina....	541	Whirlpool	160	90	75	Fresh water at 78 ft.
18	4	Sandwich Gas and Oil Syndicate No. 2.	.....	1935	.....	953	Salina....	.....	.....	Dry hole.	.....	.....	
18	4	Domestic Gas Syndicate No. 1	.....	1934	.....	601	Salina....	.....	.....	25	135	68	Fresh water at 70 ft. Sulphur water at 210 ft.
		Domestic Gas Syndicate No. 2	.....	1934	.....	585	Salina....	.....	.....	Dry hole.	.....	63	Fresh water at 63 ft. Sulphur water at 210 ft.
18-19	4	Domestic Gas Syndicate No. 3	R. Kerr farm.....	1935	.....	605	Salina....	210	Guelph...	40	210	67	Fresh water at 67 ft. Sulphur water at 215 ft.
18-19	4	Domestic Gas Syndicate No. 4	R Kerr farm.....	1935	.....	618	Salina....	430 559	Clinton... Whirlpool	50	210	78	Fresh water at 79 ft. Black water at 315 ft.
18-19	4	Domestic Gas Syndicate No. 5	R. Kerr farm.....	1935	.....	627	Salina....	448 571	..... Whirlpool	.....	210	79	Fresh water at 81 ft. Sulphur water at 220 ft.

18-19	4	Domestic Gas Syndicate No. 6	R. Kerr farm	1935	.....	624	Salina....	441 563	Clinton... Whirlpool	60	200	72	Fresh water at 93 ft. Sulphur water at 225 ft.
18-19	4	Domestic Gas Syndicate No. 7	R. Kerr farm	1935	.....	584	Salina....	.....	.....	Dry hole.	.....	51	Fresh water at 52 ft. Sulphur water at 210 ft.
19	4	Domestic Gas Syndicate No. 8	R. Kerr farm	1935	.....	590	Salina....	.....	.....	Dry hole.	.....	69	Fresh water at 52 ft.
19	4	Central Seneca Gas Syndicate Mrs. E. Harrison No. 2	935 ft. S. of N. road..... 920 ft. E. of W. road.....	1937	658	590	Salina....	442 548	Clinton... Whirlpool	37	90	77	
11	5	Dominion Natural Gas Co....	NE. Corner.....	1930	617	461	Salina....	361 452	Grimsby. Whirlpool	6	.....	40	Water at 40 and 50 ft.
12	5	Dominion Natural Gas Co....	1,350 ft. N. of S. road..... 500 ft. W. of E. line.	1930	632	523	Salina....	349 468	Clinton... Whirlpool	50	95	42	Fresh water at 42 and 45 ft.
Young Tract.....		Dominion Natural Gas Co. No. 9.	Thomas Shipway farm....	1922	650	641	Salina....	.....	.....	Dry hole.	.....	94	
Young Tract.....		Dominion Natural Gas Co. No. 10.	Thomas Shipway farm....	1922	632	616	Salina....	.....	.....	Dry hole.	.....	63	
Young Tract.....		Dominion Natural Gas Co. No. 11.	Thomas Shipway farm....	1922	624	663	Salina....	492 612	Clinton... Whirlpool	60	310	65	Abandoned 1935.
Young Tract.....		Dominion Natural Gas Co. No. 13.	Walter Hannah farm.....	1929	634	608	Salina....	481 494	Clinton... Grimsby.	43 35	190	74	
Young Tract.....		Dominion Natural Gas Co. No. 14.	Wm. Shipway farm.....	1921	651	699	Salina....	512 569	Clinton... Grimsby	58	280	84	Abandoned.
Young Tract.....		Dominion Natural Gas Co. No. 15.	Wm. Shipway farm.....	1923	587	628	Salina....	468	Clinton...	55	130	41	Abandoned.
Young Tract.....		Dominion Natural Gas Co. No. 20.	Willoughby Hannah farm.	1929	643	615	Salina....	.....	.....	Dry hole.	.....	70	Fresh water at 66 and 75 ft.
Young Tract.....		Dominion Natural Gas Co. No. 21.	R. S. Kerr farm.....	1922	652	586	Salina....	.....	.....	Dry hole.	.....	.....	
Young Tract.....		Dominion Natural Gas Co. No. 23.	Fred Lockhart farm.....	1929	641	619	Salina....	501 518	Clinton... Grimsby.	41 14	210	80	Water at 70 and 90 ft.
Young Tract.....		Dominion Natural Gas Co. No. 24.	Fred Lockhart farm.....	1929	638	619	Salina....	.....	.....	Dry hole.	.....	81	Fresh water at 80 and 95 ft.
Young Tract.....		Dominion Natural Gas Co. No. 25.	Joseph Emerson farm.....	1929	645	612	Salina....	487	Clinton...	63	487	80	Fresh water at 72 and 88 ft.
Young Tract.....		Dominion Natural Gas Co. No. 26.	Joseph Emerson farm.....	1929	650	611	Salina....	501	Clinton...	30	174	69	Fresh water at 65 ft. Black water at 265 ft.

Wells in Seneca Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
Young	Tract	Dominion Natural Gas Co. No. 27.	R. O. Martin farm	1928	609	592	Salina	478	Clinton	2		18	Fresh water at 40 ft.
Young	Tract	Dominion Natural Gas Co.	Wm. Shipway farm	1921	618	681	Salina	504 572	Clinton Grimsby	144	260	50	
Young	Tract	Dominion Natural Gas Co.		1921		680	Salina	499 629	Clinton Whirlpool	37	260		
Young	Tract	Dominion Natural Gas Co.	Wm. Shipway farm	1921		677	Salina	499 530	Clinton Clinton	68	260	104	Abandoned.
Young	Tract	Dominion Natural Gas Co.		1920		643	Salina			110			
Young	Tract	Port Colborne and Welland Gas and Oil Co. No. 3.	Fred Murdoch farm	1922	634	705	Salina	526 656	Clinton Whirlpool				Abandoned.
Young	Tract	Port Colborne and Welland Gas and Oil Co. No. 4.	Fred Murdoch farm	1922		638	Salina			Dry hole.		55	
Young	Tract	Port Colborne and Welland Gas and Oil Co. No. 6.	Fred Murdoch farm	1922	641	700	Salina	520 636	Clinton Whirlpool			62	
Young	Tract	Port Colborne and Welland Gas and Oil Co. No. 7.	Fred Murdoch farm	1922	640	701	Salina	524 644	Clinton Whirlpool			54	
Young	Tract	Rainham Gas Syndicate		1932	656	658	Salina	533	Clinton	46	250	90	Show of oil in Clinton. Water at 104 ft.
Young	Tract	Rainham Gas Syndicate	A. E. Thompson farm	1932	653	680	Salina	510	Clinton	125	210	101	Water at 105 ft.
Young	Tract	Rainham Gas Syndicate	A. E. Thompson farm, No. 1 well.	1932		648	Salina	512	Clinton	17	180	93	Water at 115 ft.
Young	Tract	Rainham Gas Syndicate	A. E. Thompson farm, No. 4 well.	1932		654	Salina			Dry hole.		88	Water at 105 ft.
Young	Tract	York Natural Gas Co. No. 2.	Robert Waring farm		657	661	Salina	505 625	Clinton Whirlpool	46	240	85	Fresh water at 100 ft.
Young	Tract	York Natural Gas Co. No. 3.	Robert Waring farm	1935	659	625	Salina			Dry hole.		93	Show of gas at 520 ft. Fresh water at 100 ft.

Young Tract.....	York Natural Gas Co. No. 1..	Robert Waring farm.....	1935	654	658	Salina....	498 616	Clinton... Whirlpool	35	135	94	Fresh water at 100 ft.
Fishcarrier-Young Tract.	Dominion Natural Gas Co. No. 28.	R. O. Martin farm.....	1929	648	613	Salina....	.....	.....	Dry hole.	.....	40	Water at 80 ft.
Fishcarrier-Young Tract.	Dominion Natural Gas Co. No. 29.	R. O. Martin farm.....	1929	663	672	Salina....	498 632	Clinton... Whirlpool	24	.....	69	
Fishcarrier-Young Tract.	Dominion Natural Gas Co. No. 30.	R. O. Martin farm.....	1929	656	675	Salina....	530	Grimsby.	65	190	52	Water at 80 ft.
Fishcarrier Tract.	Port Colborne and Welland Gas and Oil Co. No. 16.	Levi Bradt farm.....	1920	648	664	Salina....	.....	.....	87	.....	.....	
Nelles Tract.....	Dominion Natural Gas Co. No. 33.	Thomas McSorley farm...	1922	628	688	Salina....	508 636	Clinton... Whirlpool	78	30	47	
Nelles Tract.....	Dominion Natural Gas Co. No. 34.	Thomas McSorley farm...	1922	640	700	Salina....	538 643	Clinton... Whirlpool	62	255	56	
Nelles Tract.....	Dominion Natural Gas Co. No. 35.	Thomas McSorley farm...	1922	639	645	Salina....	.....	.....	.....	.....	56	Abandoned.
Nelles Tract.....	Dominion Natural Gas Co. No. 36.	Thomas McSorley farm...	1922	637	692	Salina....	530 572	Clinton... Red Medina	55	.....	78	
Nelles Tract.....	Dominion Natural Gas Co. No. 38.	J. W. Warring farm.....	1929	632	657	Salina....	472 601	Clinton... Grimsby. Whirlpool	5 10 50	.....	73	Water at 74 and 92 ft.
Nelles Tract.....	Dominion Natural Gas Co. No. 39.	J. W. Warring farm.....	1929	645	667	Salina....	482 615	Clinton... Whirlpool	55 23	482	82	Fresh water at 81 and 90 ft.
Nelles Tract.....	Dominion Natural Gas Co....	Alex Keefer farm, No. 2 well.	1924	666	614	Salina....	481 490 574	Clinton... Grimsby. Whirlpool	35 90 6	240	75	
Nelles Tract.....	Dominion Natural Gas Co....	John Keefer farm, No. 1 well.	1923	677	614	Salina....	454 589	Clinton... Whirlpool	88	250	75	
Nelles Tract.....	Dominion Natural Gas Co....	John Keefer farm, No. 2 well.	1925	666	633	Salina....	477 599	Clinton... Whirlpool	125 122	240	72	
Nelles Tract.....	Dominion Natural Gas Co....	R. Renshaw farm, No. 2 well.	1924	669	643	Salina....	484 595	Clinton... Whirlpool	28	200	76	
Nelles Tract.....	Dominion Natural Gas Co....	R. S. Kerr farm, No. 3 well	1929	637	644	Salina....	586	Whirlpool	30	135	60	Water at 70 and 75 ft.
Nelles Tract.....	Dominion Natural Gas Co....	R. A. Hamilton farm, No. 2 well.	1929	672	664	Salina....	509 609	Clinton... Whirlpool	17 4	190	53	

Wells in Seneca Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
Nelles Tract		Dominion Natural Gas Co.	W. H. Nelles farm, No. 2 well.	1924	640	635	Salina	451 568	Clinton... Whirlpool	21 18	.....	49	
Nelles Tract		Dominion Natural Gas Co.	R. S. Kerr farm, No. 1 well	1922	636	633	Salina	471 587	Clinton... Whirlpool	60	260	65	
Nelles Tract		Dominion Natural Gas Co.	James Spittal farm, No. 1 well.	1930	674	598	Salina	473 591	Clinton... Whirlpool	4	.....	89	
Nelles Tract		Dominion Natural Gas Co.	A. C. Phipps farm, No. 3 well.	1919	682	629	Salina	.....	.....	96	.....	70	
Nelles Tract		Dominion Natural Gas Co.	Florence Langford farm, No. 2 well.	1923	675	605	Salina	460 483	Clinton... Grimsby	96	210	68	
Nelles Tract		Dominion Natural Gas Co.	Florence Langford farm, No. 1 well.	1926	673	584	Salina	.....	.....	21	.....	.....	
Nelles Tract		Dominion Natural Gas Co.	H. Young farm, No. 1 well	1929	662	608	Salina	487 592	Clinton... Whirlpool	19 6	265	63	Water at 75 and 185 ft.
Nelles Tract		Dominion Natural Gas Co.	H. Young farm, No. 2 well	1929	680	635	Salina	499 603	Clinton... Whirlpool	43	146	87	Fresh water at 88 ft. Black water at 215 ft.
Nelles Tract		Dominion Natural Gas Co.	Alex Keefer farm, No. 1 well.	1923	670	613	Salina	450 464	Clinton...	104	235	68	
Nelles Tract		Dominion Natural Gas Co.	O. Quinsey farm, No. 1 well	1923	680	612	Salina	465 565	Clinton... Whirlpool	121	200	76	
Nelles Tract		Dominion Natural Gas Co.	R. A. Hamilton farm, No. 3 well.	1929	663	603	Salina	486 497	Clinton...	10	.....	55	
Nelles Tract		Dominion Natural Gas Co.	R. A. Hamilton farm, No. 1 well.	1929	647	656	Salina	476 602	Clinton... Whirlpool	27 41	160	33	
Nelles Tract		Dominion Natural Gas Co.	Jean Hamilton No. 2 well	1929	675	602	Salina	.....	.....	Dry hole.	.....	90	
Nelles Tract		Dominion Natural Gas Co.	Jean Hamilton No. 1 well	1921	676	640	Salina	499 589	Clinton... Whirlpool	22 21	223	88	Water at 95 and 220 ft.

Nelles Tract.....	Dominion Natural Gas Co....	M. Singer farm, No. 2 well.	1924	672	594	Salina....	434 555	Clinton... Whirlpool	15	39	63	
Nelles Tract.....	Dominion Natural Gas Co....	J. Templeton farm, No. 1 well.	1923	681	657	Salina....	437	Clinton...	2	.....	70	
Nelles Tract.....	Dominion Natural Gas Co....	R. Christie farm, No. 1 well.	1924	667	629	Salina....	442 562	Clinton... Whirlpool	5 32	160	70	
Nelles Tract.....	Dominion Natural Gas Co....	J. A. McKay farm, No. 1 well.	1923	680	620	Salina....	444 568	Clinton... Whirlpool	88	175	70	
Nelles Tract.....	Dominion Natural Gas Co....	A. C. Phipps farm, No. 4 well.	1924	689	635	Salina....	465 583	Clinton... Whirlpool	18	150	80	
Nelles Tract.....	Dominion Natural Gas Co....	R. Renshaw farm, No. 1 well.	1923	679	618	Salina....	482 583	Clinton... Whirlpool	43	.....	83	
Nelles Tract.....	Dominion Natural Gas Co....	.....	1930	.....	620	Salina.....	566	Whirlpool	18	110	.....	
Nelles Tract.....	Dominion Natural Gas Co....	W. H. Nelles farm, No. 1 well.	1919	.....	634	Salina....	.....	.....	62	.....	71	
Nelles Tract.....	Dominion Natural Gas Co....	A. C. Phipps farm.....	1919	.....	586	Salina....	.....	.....	68	.....	.....	
Nelles Tract.....	Port Colborne and Welland Gas and Oil Co.	W. R. Nelles farm, No. 2 well.	1924	650	585	Salina....	452	Clinton...	65	220	73	
Nelles Tract.....	Port Colborne and Welland Gas and Oil Co.	H. Cummings farm, No. 1 well.	1923	647	593	Salina....	475	.....	89	183	82	
Nelles Tract.....	Port Colborne and Welland Gas and Oil Co.	Mrs. Baker farm, No. 3 well.	1931	672	610	Salina....	447 477	Clinton...	30	.....	65	
Nelles Tract.....	Port Colborne and Welland Gas and Oil Co.	H. Thompson farm, No. 3 well.	1931	678	614	Salina..	453 569	Clinton... Whirlpool	80	165	73	
Nelles Tract.....	Port Colborne and Welland Gas and Oil Co.	L. Hagen farm, No. 2 well	1931	679	624	Salina....	456 571	Clinton... Whirlpool	130	185	73	
Nelles Tract.....	Port Colborne and Welland Gas and Oil Co.	J. Shannon farm, No. 1 well	1933	680	581	Salina....	.....	.....	Dry hole.	.....	68	Fresh water at 70 ft.
Nelles Tract.....	Port Colborne and Welland Gas and Oil Co.	H. Thompson farm, No. 2 well.	1931	632	580	Salina....	413 530	Clinton... Whirlpool	18	150	35	
Nelles Tract.....	Port Colborne and Welland Gas and Oil Co.	R. L. Young farm, No. 9 well.	1931	693	634	Salina....	471 485	Clinton...	25	145	90	
Nelles Tract.....	Port Colborne and Welland Gas and Oil Co.	.....	1923	.....	583	Salina....	.....	.....	125	220	.....	
Nelles Tract.....	Port Colborne and Welland Gas and Oil Co.	.....	1912	.....	.....	.....	.....	.....	10	120	.....	

Wells in Seneca Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
Nelles Tract		White Eagle Oil and Gas Co.	S. K. Skelton farm, No. 1 well.	1932	678	640	Salina	472 580	Clinton... Whirlpool	70	115	71	
Nelles Tract		White Eagle Oil and Gas Co.	S. K. Skelton farm, No. 2 well.	1932	685	652	Salina	475 577	Clinton... Whirlpool	40	180	82	
Nelles Tract		White Eagle Oil and Gas Co.	S. K. Skelton farm, No. 3 well.	1932	681	650	Salina	463 500	Clinton... Grimsby	35	180	85	
Nelles Tract		White Eagle Oil and Gas Co.	J. Shannon farm, No. 4 well	1932	704	650	Salina	463 572	Clinton... Whirlpool	42	220	84	
Nelles Tract		White Eagle Oil and Gas Co.	R. A. Young farm, No. 5 well.	1932	693	650	Salina	485 568	Grimsby. Whirlpool	82	180	90	
Nelles Tract		White Eagle Oil and Gas Co.	Hewson and Hall farm, No. 6 well.	1932	692	640	Salina	465 565	Clinton... Whirlpool	35	250	80	
Nelles Tract		White Eagle Oil and Gas Co.	Hewson and Hall farm, No. 7 well.	1932	696	630	Salina	454 552	Clinton... Whirlpool	30	160	.....	
Nelles Tract		White Eagle Oil and Gas Co.	John Hazen farm, No. 8 well.	1932	696	617	Salina	450	Clinton...	35	200	80	
Nelles Tract		York Natural Gas	H. and E. Hannah farm, No. 4 well.	1935	654	625	Salina	.....	.....	Dry hole.	.....	84	Fresh water at 100 ft.
Nelles Tract		Hoover and May	R. Moore farm, No. 2 well	1923	673	615	Salina	.....	.....	69	210	73	Fresh water at 80 ft.
Nelles Tract		Hoover and May	H. Cummings farm, No. 3 well.	1924	647	587	Salina	455 480	Clinton... Grimsby	99	225	75	Fresh water at 95 ft.
Nelles Tract		Hoover and May	H. Cummings farm, No. 2 well.	1924	642	585	Salina	465	Clinton...	65	170	68	Fresh water at 80 ft.
Nelles Tract		Hoover and May Fred Harrison No. 5.	.....	1924	.....	603	Salina	475 507	Clinton...	39	200	80	

B	R.R.	?	Village of Deans	1921	614	681	Salina	507 522	Clinton	55	280	.....	
14	R.R.	Dominion Natural Gas Co. No. 31.	T. McSorley farm	1921	600	654	Salina	480 598	Clinton Whirlpool	55	230	43	
14	R.R.	Dominion Natural Gas Co. No. 32.	T. McSorley farm	1921	594	664	Salina	478 610	Clinton Whirlpool	111	240	28	
34	R.R.	Port Colborne and Welland Gas and Oil Co.	R. Kingston farm, No. 1 well.	1933	627	544	Salina	367	Clinton	20	135	27	Fresh water at 60 ft.
35	R.R.	Port Colborne and Welland Gas and Oil Co.	W. Hudspeth farm, No. 1 well.	1933	679	540	Salina	425 532	Clinton Whirlpool	.....	.....	54	Fresh water at 60 ft.
36	R.R.	Port Colborne and Welland Gas and Oil Co.	Geo. McAlpine farm, No. 2 well.	1933	621	497	Salina	367 391	Clinton	.....	.....	16	Fresh water at 15 ft.
		Port Colborne and Welland Gas and Oil Co.	Geo. McAlpine farm, No. 3 well.	1933	652	591	Salina	393	Clinton	30	132	34	Water at 170 ft.
?	R.R.	Port Colborne and Welland Gas and Oil Co.	L. Hazen farm, No. 1 well	1931	677	606	Salina	564	Whirlpool	20	185	61	
		Port Colborne and Welland Gas and Oil Co.	Fred Brown farm, No. 1 well.	1933	683	536	Salina	.....	.....	Dry hole.	.....	47	Water at 60 ft.
1	1 W.S.C.R.	Dominion Natural Gas Co.	Thomas Shipway farm, No. 12 well.	1923	589	638	Salina	.....	.....	157	471	31	
1	1 W.S.C.R.	Dominion Natural Gas Co.	.....	1932	.....	.....	.....	.....	.....	Dry hole.	.....	.....	
5	1 W.S.C.R.	Security Oil and Gas Co. J. Munn No. 1	1,500 ft. S. of N. road 600 ft. E. of W. line.	1934	647	500	Salina	.....	.....	.....	.....	78	Fresh water at 98 ft.
5	1 W.S.C.R.	Security Oil and Gas Co. H. Berry No. 1	3,000 ft. S. of N. road 50 ft. E. of W. line.	1934	662	502	Salina	395 490	Clinton Whirlpool	48	55	80	Fresh water at 100 ft.
13	1 W.S.C.R.	Dominion Natural Gas Co. E. Burrows No. 1.	SW. Corner	1930	685	596	Salina	430 541	Clinton Whirlpool	75	120	85	Fresh water at 90 ft.
13	1 W.S.C.R.	E. Burrows No. 2.	1,600 ft. N. of S. road 50 ft. E. of W. line.	1930	687	589	Salina	436 543	Clinton Whirlpool	74	.....	84	Water at 190 ft.
14	1 W.S.C.R.	Dominion Natural Gas Co. D. Sutor No. 1	3,300 ft. N. of S. road 250 ft. W. of E. line.	1930	690	528	Salina	.....	.....	Dry hole.	.....	80	Fresh water at 30 ft.
14	1 W.S.C.R.	D. Sutor No. 2	700 ft. N. of S. road 50 ft. E. of W. line.	1930	694	585	Salina	425 534	Clinton Whirlpool	31	134	82	Fresh water at 76 ft.
13	2 W.S.C.R.	Dominion Natural Gas Co. L. Hussock	1,200 ft. S. of N. road 50 ft. E. of W. line.	1930	691	559	Salina	447	Clinton	12	.....	77	Fresh water at 81 ft.
14	2 W.S.C.R.	Dominion Natural Gas Co. W. McLean No. 1	650 ft. S. of N. road 50 ft. E. of W. line.	1931	687	596	Salina	538	Whirlpool	49	115	86	Fresh water at 95 ft.

Wells in Seneca Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
1	R. 3	Dominion Natural Gas Co....	350 ft. N. of S. line..... 900 ft. W. of E. line.	1930	693	502	Salina....	484	Whirlpool	7	105	.....	
2	R. 3	Dominion Natural Gas Co....	350 ft. N. of S. line..... 1,100 ft. E. of W. line.....	1930	681	543	Salina....	381 492	Clinton... Whirlpool	39	150	.....	
5	R. 3	Dominion Natural Gas Co... Jas. Stubbs No. 1.	NE. Corner.....	1931	678	571	Salina....	513	Whirlpool	14	.....	72	Fresh water at 78 ft. Sulphur water at 140 ft.
7	R. 3	Dominion Natural Gas Co.... Joe James No. 1.....	300 ft. S. of N. line..... 700 ft. E. of W. line.....	1931	667	588	Salina....	424 527	Clinton... Whirlpool	11	.....	84	Fresh water at 90 ft. Salt water at 434 ft.

Wells in Rainham Township, Haldimand County

1	1	Norhal Gas and Oil Syndicate	.....	1934	.....	921	Onondaga	786 836	Clinton... Grimsby	17	125	23	Fresh water at 50 ft.
2	1	Dominion Natural Gas Co....	NW. Corner.....	1907	621	960	Onondaga	815	.....	.....	.....	17	
3	1	Domestic Natural Gas Syndicate. I. Stadder No. 1.	850 ft. S. of N. line..... 50 ft. E. of W. line.	1935	650	963	Onondaga	.....	.....	Dry hole.	.....	8	Fresh water at 80 ft.
5	1	Rainham Gas Syndicate..... Ben. Hoover No. 1.....	4,600 ft. S. of N. line..... 200 ft. W. of E. line.	1932	610	920	Onondaga	.....	.....	Dry hole.	.....	11	Fresh water at 37 and 52 ft.
5	1	Dominion Natural Gas Co....	NW. Corner.....	.....	654	955	Onondaga	786 836	Clinton... Grimsby	382	.....	15	
5	1	Dominion Natural Gas Co....	.....	1907	.....	964	Onondaga	786	Clinton...	476	500	13	
6	1	Rainham Gas Syndicate.....	4,100 ft. S. of N. road..... 200 ft. W. of E. line.	1932	616	925	Onondaga	.....	.....	Dry hole.	.....	15	Water at 75 ft.
9	1	Rainham Gas Syndicate..... R. Booker No. 1.....	2,150 ft. S. of N. line..... 100 ft. W. of E. line.	1932	629	900	Onondaga	.....	.....	Dry hole.	15	.....	Water at 40 ft.

9	1	Dominion Natural Gas Co....	.....	.....	.....	954	Onondaga	805 828	Clinton...	.....	.....	.....	Show of gas.
9	1	Dominion Natural Gas Co....	.....	.....	.....	947	Onondaga	780 802	Clinton... Grimsby	.....	.....	10	Show of gas.
10	1	Rainham Gas Syndicate..... B. Hoover No. 1.....	2,000 ft. S. of N. line..... 1,100 ft. W. of E. line.	1932	635	911	Onondaga	.....	.....	Dry hole.	.....	13	Water at 25 ft.
10	1	Rainham Gas Syndicate..... W. Elfner No. 1.....	800 ft. S. of N. line..... 500 ft. W. of E. line.	1932	640	909	Onondaga	790	Clinton...	19	230	7	Water at 90 ft.
10	1	Dominion Natural Gas Co....	3,150 ft. S. of N. line..... 50 ft. W. of E. line.....	1906	624	944	Onondaga	810 825	Grimsby.	.....	.....	17	
11	1	Dominion Natural Gas Co.... Jacob Franklin No. 1.	500 ft. S. of N. line..... 700 ft. W. of E. line.....	1907	641	909	Onondaga	770 815	Clinton... Grimsby	.....	.....	12	Abandoned.
11	1	Kelly Gas and Oil Syndicate. Mrs. Rose Featherston No. 1	50 ft. S. of N. line..... 500 ft. E. of W. line.....	1933	641	909	Onondaga	780 826	Clinton... Grimsby	23	330	15	Water at 75 ft.
11	1	Producer's Gas Co.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2 wells; not located.
13	1	Dominion Natural Gas Co....	5,000 ft. S. of N. line..... 50 ft. E. of W. line.	1907	581	923	Onondaga	815	Grimsby.	.....	.....	14	
13	1	Dominion Natural Gas.....	.....	1929	.....	886	Onondaga	.....	.....	Dry hole.	.....	7	Fresh water at 20 ft. Black water at 500 ft.
13	1	Dominion Natural Gas.....	.....	1907	.....	.....	Onondaga	.....	.....	.....	500	.....	
13	1	Alex. McDougall.....	1,650 ft. S. of N. line..... 50 ft. E. of W. line.	1933	609	894	Onondaga	.....	.....	83	282	16	Mineral water at 30 ft. Sulphur water at 460 ft.
14	1	Dominion Natural Gas Co....	NW. Corner.....	.....	623	.....	Onondaga	.....	.....	221	.....	.....	
14	1	W. B. Lindsay..... Wm. Jepson No. 1.....	2,000 ft. S. of N. line..... 1,200 ft. E. of W. line.	1932	596	875	Onondaga	.....	.....	37	275	7	Fresh water at 38 ft.
14	1	Alex. McDougall.....	3,000 ft. S. of N. line..... 750 ft. E. of W. line.	1933	598	875	Onondaga	.....	.....	73	310	7	Fresh water at 40 ft. Sulphur water at 442 ft.
14	1	A. McDougall..... Wm. Jepson No. 3.....	3,600 ft. S. of N. line..... 800 ft. E. of W. line.	1933	597	890	Onondaga	.....	.....	27	280	8	Mineral water at 30 ft. Sulphur water at 460 ft.
14	1	A. McDougall..... Wm. Jepson No. 4.....	4,300 ft. S. of N. line..... 50 ft. W. of E. line.	1933	589	886	Onondaga	.....	.....	200	270	25	Mineral water at 30 ft. Sulphur water at 460 ft.
14	1	Alex. McDougall..... J. Hartwick No. 1.....	600 ft. S. of N. line..... 1,200 ft. E. of W. line.	1933	616	885	Onondaga	.....	.....	200	270	13	Fresh water at 40 ft. Sulphur water at 458 ft.

Wells in Rainham Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
15	1	Alex. McDougall Mrs. D. Reicheld No. 1	800 ft. S. of N. line 50 ft. E. of W. line.	1933	614	881	Onondaga	.....	.....	Dry hole.	.....	8	Black water at 35 ft. Sulphur water at 410 ft.
15	1	W. B. Lindsay H. Zimmerman No. 1	220 ft. S. of N. line 500 ft. E. of W. line.	1932	600	871	Onondaga	.....	.....	25	275	7	Fresh water at 35 ft.
15	1	Dominion Natural Gas Co. G. A. Fitzgerald No. 1	.....	1907	.....	923	Onondaga	760 810	Clinton... Grimsby	.....	.....	11	Show of gas at 765 ft.
15	1	Dominion Natural Gas Co.	SW. Corner	.....	582	.....	.....	.....	.....	175	.....	.....	Abandoned.
15	1	Dominion Natural Gas Co.	.....	.....	575	.....	.....	.....	.....	313	.....	.....	
16	1	Dominion Natural Gas Co. Solomon Jones No. 1.	.....	1910	.....	886	Onondaga	747 791	Clinton...	75	435	15	
16	1	Dominion Natural Gas Co.	NE. Corner	.....	610	.....	Onondaga	.....	.....	90	.....	.....	
16	1	Dominion Natural Gas Co. James Daley No. 1.	.....	1906	.....	889	Onondaga	795	.....	.....	.....	10	
16	1	Dominion Natural Gas Co. James Daley No. 2.	.....	1927	.....	892	Onondaga	747	Clinton...	.....	.....	11	Fresh water at 60 ft. Black water at 510 ft.
16	1	Lymburner and Webber Wm. Jepson No. 1	400 ft. S. of N. line 900 ft. E. of W. line.	1932	606	914	Onondaga	746 859	Clinton... Whirlpool	30	290	19	Water at 28 and 90 ft.
16	1	Wm. Jepson No. 2	1,100 ft. S. of N. line 50 ft. E. of W. line.	1932	604	871	Onondaga	.....	.....	.....	.....	21	Water at 60 and 120 ft.
17	1	Dominion Natural Gas Co.	2,500 ft. S. of N. line 400 ft. W. of E. line.	1928	610	875	Onondaga	777	Clinton...	30	370	14	Fresh water at 30 ft. Black water at 595 ft.
17	1	Dominion Natural Gas Co. Jas. Wardell No. 1	50 ft. N. of S. line 300 ft. W. of E. line.	1906	585	886	Onondaga	742 782	Clinton Grimsby	350	.....	14	
17	1	Dominion Natural Gas Co. Geo. Daley No. 1.	.....	1927	.....	895	Onondaga	750 793	Clinton... ?	104	360	4	Fresh water at 26 ft. Black water at 510 ft.
18	1	Dominion Natural Gas Co.	3,850 ft. S. of N. line 500 ft. E. of W. line.	1928	601	875	Onondaga	780	Grimsby.	55	372	14	Fresh water at 40 ft. Black water at 510 ft.

18	1	W. C. Patterson Mrs. Sherk No. 1.	1,000 ft. S. of N. road. 700 ft. W. of E. road.	1936	614	856	Onondaga			Dry hole.		17	Black water at 60 ft.
18	1	W. C. Patterson E. Sherk No. 2	1,900 ft. S. of N. road. 100 ft. W. of E. road.	1936	614	856	Onondaga			Dry hole.		10	Fresh water at 40 ft.
18	1	Victoria Gas Co. J. Schier No. 2	1,650 ft. S. of N. road. 1,800 ft. W. of E. road.	1936	613	860	Onondaga			73	385	13	Fresh water at 70 ft. Black water at 410 ft.
18	1	Victoria Gas Co. J. Schier No. 3	1,700 ft. S. of N. road. 800 ft. W. of E. road.	1936	615	854	Onondaga			80	390	10	Fresh water at 36 ft. Black water at 375 ft.
19	1	Dominion Natural Gas Co. A. Mowatt No. 1	3,800 ft. S. of N. line. 50 ft. E. of W. line.	1928	603	867	Onondaga	728 768	Clinton... Grimsby	21		7	Fresh water at 32 ft. Black water at 510 ft.
19	1	Dominion Natural Gas Co. Wm. Mowatt No. 1.	SW. Corner	1906	583	865	Onondaga	758 768	Grimsby.			13	
21	1	Dominion Natural Gas Co.	SW. Corner		584	857	Onondaga	740	Clinton...			14	
21	1	Dominion Natural Gas Co.		1927		840	Onondaga			Dry hole.		2	Fresh water at 16 ft. Sulphur water at 37 ft.
21	1	Victoria Gas Co. Booker No. 1	3,100 ft. S. of N. road. 100 ft. E. of W. road.	1936	587	851	Onondaga			Dry hole.			
23	1	Dominion Natural Gas Co. Wm. Austin No. 1	2,200 ft. N. of S. line. 200 ft. W. of E. line.	192 8	576	861	Onondaga			Dry hole.		11	Fresh water at 16 ft. Black water at 500 ft.
25	1	Dominion Natural Gas Co.	SE. Corner		586	865	Onondaga	755 785	Clinton... Grimsby			15	
2	2	Rainham Gas Syndicate	700 ft. S. of N. line. 50 ft. E. of W. line.	1929	631	940	Onondaga			Dry hole.		19	Sulphur water at 45 ft.
3	2	Rainham Gas and Oil Syndicate. A. Schweyer No. 8.	450 ft. S. of N. line. 600 ft. E. of W. line.	1926	617	927	Onondaga		Clinton...	78	410	15	Sulphur water at 40 ft.
3	2	Dominion Natural Gas Co. Rushton No. 1.		1907		969	Onondaga	828 850	Clinton... Grimsby			14	
3	2	Dominion Natural Gas Co. M. Stewart No. 3.		1929		935	Onondaga	804 827	Clinton... Grimsby.	14 20	425	18	Fresh water at 26 ft. Black water at 510 ft.
3	2	M. Stewart No. 4		1929		936	Onondaga	835		43	225	8	Fresh water at 28 ft. Black water at 530 ft.
3	2	Dominion Natural Gas Co.		1907		967	Onondaga	852	Grimsby.			14	
4	2	Rainham Gas and Oil Syndicate.	700 ft. S. of N. line. 1,000 ft. W. of E. line.	1929	634	928	Onondaga	782 810	Clinton... Clinton...	92	410	32	Water at 80 ft.
5	2	Dominion Natural Gas Co. E. Smelser No. 1	2,500 ft. S. of N. line. 800 ft. W. of E. line.	1930	639	938	Onondaga			Dry hole.		22	Fresh water at 120 ft. Black water at 530 ft.

Wells in Rainham Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
5	2	Dominion Natural Gas Co.... Jacob Held No. 1.	NE. Corner.....	1907	632	924	Onondaga	.....	.....	Dry hole.	.....	24	
5	2	Dominion Natural Gas Co.... P. A. Floyd No. 1.	.....	1909	.....	956	Onondaga	842	.....	386	410	12	
6	2	Dominion Natural Gas Co....	NE. Corner.....	1907	641	943	Onondaga	784 820	Clinton... Grimsby	.....	.....	38	
6	2	Dominion Natural Gas Co.... Ed. Bretzler No. 1.....	1,400 ft. S. of N. line..... 50 ft. E. of W. line.	1929	643	940	Onondaga	805	Clinton...	231	305	29	Fresh water at 34 ft. Black water at 525 ft.
7	2	Union Gas Co. No. 59.....	1,500 ft. N. of S. line..... 50 ft. E. of W. line.	1930	646	963	Onondaga	842	.....	16	231	11	
7	2	Dominion Natural Gas Co....	2,000 ft. S. of N. line..... 400 ft. W. of E. line.....	1930	644	933	Onondaga	790 835	Clinton... Grimsby	82	350	17	Fresh water at 98 ft. Black water at 520 ft.
7	2	Dominion Natural Gas Co.... C. J. Smelser No. 1.	.....	1929	.....	932	Onondaga	802	Clinton...	22	356	22	Fresh water at 35 ft. Black water at 530 ft.
8	2	Dominion Natural Gas Co....	1,950 ft. N. of S. line..... 800 ft. E. of W. line.....	1930	656	929	Onondaga	792 837	Clinton... Grimsby	90	415	10	Fresh water at 96 ft. Black water at 510 ft.
8	2	Dominion Natural Gas Co.... W. F. Schaeffer No. 3.	.....	1930	.....	924	Onondaga	790 819	Clinton... Grimsby.	5 19	418	10	Fresh water at 98 ft. Black water at 510 ft.
8	2	Dominion Natural Gas Co....	1,200 ft. S. of N. line..... 900 ft. W. of E. line.....	1929	628	918	Onondaga	782 796	Clinton... Grimsby	46	.....	23	Fresh water at 35 ft. Black water at 510 ft.
9	2	Dominion Natural Gas Co.... V. Otterman No. 3.....	2,750 ft. N. of S. line..... 50 ft. E. of W. line.	1930	661	924	Onondaga	819	Clinton...	24	418	10	Black water at 510 ft.
9	2	Rainham Gas and Oil Syndicate. M. Werner No. 1.	900 ft. N. of S. line..... 450 ft. W. of E. line.	1932	653	916	Onondaga	773	Clinton...	23	250	14	Water at 63 ft.
9	2	Dominion Natural Gas Co.... W. F. Schaeffer No. 2.....	1,500 ft. N. of S. line..... 900 ft. E. of W. line.....	1930	655	917	Onondaga	777 827	Clinton... Grimsby.	50 13	325	13	Fresh water at 83 ft.

9	2	Dominion Natural Gas Co.... W. F. Schaeffer No. 1.	.....	1929	.....	919	Onondaga	.....	.....	Dry hole.	.....	18	Fresh water at 53 ft. Black water at 530 ft.
10	2	Dominion Natural Gas Co.... H. Yocum No. 1.....	2,500 ft. N. of S. line..... 400 ft. E. of W. line.	1930	655	917	Onondaga	.....	.....	Dry hole.	.....	24	Fresh water at 140 ft. Black water at 535 ft.
10	2	Dominion Natural Gas Co.... Jacob Nagel No. 1.....	1,000 ft. S. of N. line..... 50 ft. W. of E. line.....	1928	647	955	Onondaga	780 892	Clinton...	78	373	21	Fresh water at 40 ft. Black water at 510 ft.
10	2	Rainham Gas and Oil Syndicate. N. Sevenpifer No. 1.	2,050 ft. N. of S. line..... 50 ft. W. of E. line.....	1932	649	908	Onondaga	775 815	Clinton... Grimsby	160	325	21	Water at 65 ft.
10	2	N. Sevenpifer No. 2.....	SE. Corner.....	1932	648	909	Onondaga	795	Clinton...	54	315	16	Water at 98 ft.
10	2	N. Sevenpifer No. 3.....	1,150 ft. N. of S. line..... 350 ft. W. of E. line.....	1932	649	907	Onondaga	767 803	Clinton... Grimsby	53	380	13	Water at 39 ft.
10	2	N. Sevenpifer No. 4.....	3,000 ft. N. of S. line..... 550 ft. W. of E. line.	1932	653	910	Onondaga	775	Clinton...	20	250	15	Water at 72 ft.
10	2	Dominion Natural Gas Co.... M. A. Lee No. 1.	.....	1905	.....	987	Onondaga	807 837	Clinton... Grimsby	30	.....	12	
10	2	Dominion Natural Gas Co.... Jacob Nagel No. 2.	.....	1929	.....	868	Onondaga	762 802	Clinton... Grimsby.	100 540	356	16	Fresh water at 80 ft. Black water at 525 ft.
10	2	Dominion Natural Gas Co.... Geo. Arnold No. 3.	.....	1929	.....	912	Onondaga	783	Clinton...	58	386	14	Fresh water at 40 and 78 ft. Black water at 525 ft.
11	2	Dominion Natural Gas Co.... Geo. Arnold No. 1.....	50 ft. S. of N. line..... 1,000 ft. W. of E. line.	1928	645	897	Onondaga	800	Grimsby.	88	393	22	Fresh water at 40 ft. Black water at 510 ft.
11	2	Geo. Arnold No. 2.....	2,400 ft. S. of N. line..... 1,000 ft. E. of W. line.....	1928	653	967	Onondaga	790 893	.....	535	378	9	Fresh water at 45 ft. Black water at 515 ft.
11	2	Dominion Natural Gas Co....	800 ft. S. of N. line..... 50 ft. W. of E. line.	1928	648	894	Onondaga	790	.....	34	378	23	Fresh water at 33 ft. Black water at 510 ft.
11	2	Dominion Natural Gas Co.... Alian Nauman No. 1.	.....	1929	.....	945	Onondaga	773 889	Clinton... Whirlpool	60	.....	10	Fresh water at 80 ft. Black water at 525 ft.
12	2	Kelly Gas and Oil Syndicate.. Mrs. E. Legatt No. 1.....	1,000 ft. N. of S. line..... 50 ft. E. of W. line.	1933	629	900	Onondaga	.....	.....	150	310	18	Water at 50 ft.
12	2	Mrs. E. Legatt No. 2.....	1,650 ft. N. of S. line..... 750 ft. E. of W. line.	1933	631	904	Onondaga	.....	Clinton...	40	300	28	Water at 45 ft.
12	2	Mrs. E. Leggatt No. 3.....	500 ft. N. of S. line..... 300 ft. E. of W. line.	1933	627	903	Onondaga	.....	.....	35	339	19	Water at 55 ft.
12	2	S. Leggatt No. 4.....	1,300 ft. N. of S. line..... 400 ft. W. of E. line.	1933	626	898	Onondaga	.....	.....	50	335	9	Water at 50 and 90 ft.

Wells in Rainham Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
12	2	Superior Gas Syndicate..... W. Nagel No. 1.....	1,350 ft. S. of N. line..... 600 ft. W. of E. line.....	1931	644	938	Onondaga	742 875	Clinton...	144	320	23	Sulphur water at 37 ft.
12	2	W. Nagel No. 2.....	1,500 ft. S. of N. line..... 350 ft. E. of W. line.....	1931	646	891	Onondaga	771 791	Clinton... Grimsby	238	325	20	Sulphur water at 54 ft.
12	2	W. Nagel No. 3.....	450 ft. S. of N. line..... 850 ft. W. of E. line.....	1931	649	885	Onondaga	744 795	Clinton...	171	325	25	Sulphur water at 50 ft.
12	2	W. Nagel No. 4.....	NW. Corner.....	1933	646	895	Onondaga	755 783	Clinton... Grimsby	30	300	15	Sulphur water at 550 ft.
12	2	Dominion Natural Gas Co.... M. Nagel No. 1.....	2,300 ft. N. of S. line..... 50 ft. E. of W. line.	1929	640	916	Onondaga	886	Whirlpool	34	364	15	Fresh water at 40 ft. Black water at 525 ft.
12	2	Dominion Natural Gas Co.... Wm. Nagel No. 1.....	2,500 ft. S. of N. line..... 600 ft. W. of E. line.	1929	645	980	Onondaga	909	Whirlpool	590	380	10	Fresh water at 40 ft. Black water at 525 ft.
12	2	Wm. Nagel No. 2.....	2,650 ft. S. of N. line..... 50 ft. E. of W. line.	1929	644	898	Onondaga	804	Grimsby.	121	312	27	Fresh water at 40 ft. Black water at 525 ft.
12	2	Dominion Natural Gas Co.... M. Nagel No. 1.	.....	1907	.....	890	Onondaga	788	.....	.....	.....	21	Show of gas.
13	2	Superior Gas Syndicate..... Wm. Nagel No. 1.....	1,000 ft. S. of N. line..... 600 ft. E. of W. line.	1932	652	897	Onondaga	761	Clinton...	4	.....	12	Sulphur water at 34 ft.
13	2	W. Nagel No. 2.....	600 ft. S. of N. line..... 50 ft. E. of W line.	1932	645	886	Onondaga	.....	.....	6	.....	22	Sulphur water at 27 ft.
13	2	Dominion Natural Gas Co.... M. Nagel No. 2.....	600 ft. S. of N. line..... 200 ft. W. of E. line.	1930	651	891	Onondaga	.....	.....	21	252	14	Fresh water at 21 and 98 ft. Black water at 500 ft.
13	2	Dominion Natural Gas Co.... Lewis Alway No. 3.....	1,000 ft. N. of S. line..... 50 ft. W. of E. line.	1930	630	945	Onondaga	892	Whirlpool	71	305	15	Black water at 500 ft.
13	2	Dominion Natural Gas Co.... Fred Nagel No. 2.....	1,750 ft. S. of N. line..... 400 ft. W. of E. line.....	1930	644	938	Onondaga	766 879	Clinton...	115	278	13	Water at 19 and 500 ft.

13	2	Fred Nagel No. 1		1906		887	Onondaga	780 795	Clinton... Grimsby			23	Show of gas.
13	2	?	1,900 ft. S. of N. line..... 50 ft. E. of W. line.		643		Onondaga			313			
14	2	Dominion Natural Gas Co.... Stephen Culver No. 2	1,050 ft. N. of S. line..... 450 ft. W. of E. line.....	1930	633	902	Onondaga	780 796	Clinton... Grimsby	42	225	16	Water at 30 and 480 ft.
15	2	Lymburner and Webber..... Geo. Elfner No. 3	2,500 ft. N. of S. line..... 800 ft. E. of W. line.	1933	628	869	Onondaga			19		14	Fresh water at 15 ft.
15	2	Geo. Elfner No. 5	1,750 ft. N. of S. line..... 500 ft. W. of E. line.....	1933	630	928	Onondaga	767 869	Clinton... Whirlpool	100	200	12	Fresh water at 93 ft.
15	2	Geo. Elfner No. 6	2,700 ft. N. of S. line..... 50 ft. W. of E. line.	1933	636	877	Onondaga	769	Grimsby.	70	200	12	Fresh water at 52 and 125 ft.
15	2	Dominion Natural Gas Co....	SW. Corner.....	1907	616	900	Onondaga	755 795	Clinton... Grimsby.	60 200	480	13	
15	2	Geo. Dashner No. 1		1907	653	882	Onondaga	763 787	Clinton... Grimsby			13	
16	2	Lymburner and Webber..... Fred Elfner No. 1	3,000 ft. S. of N. line..... 700 ft. W. of E. line.	1932	637	883	Onondaga	734 759	Clinton...	43	270	8	Black water at 60 and 100 ft.
16	2	Fred Elfner No. 2	1,650 ft. N. of S. line..... 700 ft. W. of E. line.....	1932	625	872	Onondaga	758 778	Clinton... Grimsby	95	200	12	Black water at 80 ft.
16	2	Fred Elfner No. 3	1,300 ft. N. of S. line..... 700 ft. E. of W. line.....	1932	625	917	Onondaga	768 861	Grimsby. Whirlpool	56	350	12	Black water at 55 ft.
16	2	Fred Elfner No. 4	450 ft. N. of S. line..... 700 ft. W. of E. line.	1932	613	867	Onondaga	765	Grimsby.	27	250	8	Black water at 105 and 146 ft.
17	2	E. Mesner No. 1	1,850 ft. S. of N. line..... 650 ft. E. of W. line.	1933	649	880	Onondaga			Dry hole.		11	Fresh water at 30 ft.
17	2	E. Mesner No. 2	1,300 ft. S. of N. line..... 100 ft. W. of E. line.	1933	660	880	Onondaga			Dry hole.		11	Fresh water at 50 ft.
17	2	E. L. Plummer No. 1	2,200 ft. N. of S. line..... 500 ft. E. of W. line.	1932	624	864	Onondaga			Dry hole.		10	Fresh water at 37 ft. Salt water at 550 ft. Show of gas at 771 ft.
17	2	John F. McKinney..... Wm. Davis No. 1	3,000 ft. N. of S. line..... 600 ft. W. of E. line.....	1932	635	872	Onondaga	728 775	Clinton...	90	405	7	Sulphur water at 45 ft.
17	2	Wm. Davis No. 2	1,900 ft. N. of S. line..... 1,100 ft. E. of W. line.	1932	626	867	Onondaga	723 764	Clinton...	175	435	10	Sulphur water at 45 ft.
17	2	Wm. Davis No. 3	1,500 ft. N. of S. line..... 900 ft. W. of E. line.	1932	620	862	Onondaga			21	360	6	Water at 25 and 40 ft.

Wells in Rainham Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
17	2	Wm. Davis No. 4	2,100 ft. S. of N. line..... 200 ft. W. of E. line.....	1932	651	881	Onondaga	737 785	Clinton... Grimsby	90	300	5	Water at 16 and 40 ft.
17	2	Domestic Gas Co..... W. Stadder No. 1.....	500 ft. N. of S. road..... 750 ft. W. of E. line.....	1935	613	872	Onondaga	737 763	Clinton...	40	325	16	Fresh water at 60 ft. Black water at 220 ft. Sulphur water at 610 ft.
17	2	I. Stadder No. 2.....	1,400 ft. N. of S. road..... 350 ft. E. of W. line.	1935	619	895	Onondaga	.....	.....	Dry hole.	.....	18	Fresh water at 55 ft. Sulphur water at 330 ft. Black water at 645 ft.
18	2	Sweets' Corner Gas Syndicate Wm. Schier No. 1.....	2,100 ft. N. of S. line..... 500 ft. W. of E. line.	1932	627	863	Onondaga	.....	.....	Dry hole.	.....	17	Fresh water at 29 ft.
18	2	Wm. Schier No. 2.....	2,500 ft. S. of N. line..... 900 ft. W. of E. line.	1932	644	902	Onondaga	.....	.....	Dry hole.	.....	14	Fresh water at 45 ft.
18	2	Victoria Gas Co..... J. Schier No. 1.....	100 ft. N. of S. road..... 1,250 ft. W. of E. road.	1936	610	841	Onondaga	.....	.....	35	465	13	Fresh water at 32 ft. Black water at 415 ft
19	2	Dominion Natural Gas Co.... B. Zimmerman No. 1.....	50 ft. N. of S. line..... 850 ft. W. of E. line.....	1907	602	846	Onondaga	727 757	Clinton... Grimsby	.....	.....	7	
1	3	Lymburner and Webber..... W. L. Schweyer No. 4.....	550 ft. E. of W. road..... 840 ft. N. of S. road.	1937	652	951	Onondaga	819	Clinton...	25	450	12	Fresh water at 32 ft.
1	3	W. L. Schweyer No. 5.....	840 ft. E. of W. road..... 80 ft. N. of S. road.....	1937	648	954	Onondaga	831 847	Clinton... Grimsby	65	450	10	Fresh water at 38 and 119 ft., rises 52 ft.
1	3	Union Gas Co. No. 208.....	2,140 ft. N. of SW. road corner. 1,145 ft. E. of corner.	1938	656	946	Onondaga	810	Clinton...	63			
1	3	Lymburner and Webber..... W. L. Schweyer No. 3.....	800 ft. E. of W. road..... 1,645 ft. N. of S. road.....	1937	652	949	Onondaga	807 858	Clinton... Grimsby	50	440	11	Fresh water at 57 ft., rises 35 ft.
2	3	Rainham Gas and Oil Syndicate. E. Bingleman No. 7.	750 ft. N. of S. line..... 50 ft. W. of E. line.	1926	632	918	Onondaga	.....	.....	46	410	20	
3	3	J. Benner No. 6.....	50 ft. N. of S. line..... 800 ft. W. of E. line.	1926	610	905	Onondaga	.....	.....	138	425	11	Sulphur water at 40 ft.

3	3	Union Gas Co. No. 207	355 ft. W. of E. line, 50 ft. S. of N. road.	1938	644	946	Onondaga	800	Clinton	15			Abandoned.
4	3	Rainham Gas and Oil Syndicate, John Cusler No. 4.	50 ft. N. of S. line, 600 ft. W. of E. line.	1926	611	904	Onondaga			132	420	11	Sulphur water at 30 ft.
4	3	Ed. Schweyer No. 5	450 ft. N. of S. line, 400 ft. E. of W. line.	1926	610	908	Onondaga		Clinton, Grimsby	140	425	9	Sulphur water at 40 ft.
4	3	Haldimand Gas Fields Syndicate, Jacob Lint No. 2.	1,900 ft. S. of N. line, 800 ft. W. of E. line.	1931	648	930	Onondaga		Grimsby	80	435	19	Sulphur water at 30 ft.
5	3	Lewis Lint No. 1	1,000 ft. S. of N. line, 200 ft. W. of E. line.	1931	646	921	Onondaga			Dry hole		14	Fresh water at 26 ft. Sulphur water at 50 ft.
5	3	Lewis Lint No. 2	1,650 ft. S. of N. line, 700 ft. W. of E. line.	1931	644	951	Onondaga	780 915	Clinton Whirlpool	37	425	14	Sulphur water at 610 ft.
5	3	Jacob Lint No. 1	2,000 ft. N. of S. line, 100 ft. E. of W. line.	1931	640	924	Onondaga		Grimsby	230	435	17	Sulphur water at 37 and 50 ft.
5	3	Rainham Gas and Oil Syndicate, E. Held No. 3.	50 ft. N. of S. line, 400 ft. E. of W. line.	1926	628	936	Onondaga			23	415	34	
5	3	R. Corbett No. 11	850 ft. N. of S. line, 50 ft. W. of E. line.	1929	622	905	Onondaga			Dry hole		23	Sulphur water at 60 ft.
6	3	Haldimand Gas Fields Syndicate, W. Dashner No. 1.	NE. Corner	1931	641	918	Onondaga		Clinton Grimsby	53	420	19	Sulphur water at 42 ft.
6	3	W. Dashner No. 2	1,100 ft. S. of N. line, 750 ft. W. of E. line.	1931	639	913	Onondaga			Dry hole		20	
6	3	W. Dashner No. 3	50 ft. S. of N. line, 1,100 ft. E. of W. line.	1932	650	915	Onondaga	764 793	Clinton Grimsby	26	210	12	Water at 35 ft.
6	3	Wilfrid Dashner No. 4	2,150 ft. S. of N. road, 24 ft. W. of E. road.	1937	637	967	Onondaga	782 907	Clinton Whirlpool	23	265	26	Fresh water at 30 ft., rises 11 ft.
6	3	Rainham Gas and Oil Syndicate, H. Arnold No 2.	350 ft. N. of S. line, 1,000 ft. E. of W. line.	1926	631	930	Onondaga			58	350	38	Sulphur water at 60 ft.
6	3	Dominion Natural Gas Co., Amon Birk No. 1	2,000 ft. S. of N. line, 100 ft. W. of E. line.	1929	640	945	Onondaga	816 915	Grimsby Whirlpool	55	382	23	Black water at 603 ft.
6	3	Dominion Natural Gas Co., Amon Birk No. 2	650 ft. S. of N. line, 400 ft. E. of W. line.	1929	649	927	Onondaga	815 883		198	400	14	
7	3	M. J. Roth No. 1		1927	652	969	Onondaga	775 911	Clinton Whirlpool	178 20	410	24	Fresh water at 37 ft. Black water at 437 ft.

Wells in Rainham Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
7	3	M. J. Roth No. 2	1,450 ft. S. of N. line 600 ft. W. of E. line	1929	641	972	Onondaga	772 809	Clinton... Grimsby	272	415	18	Fresh water at 35 ft. Black water at 580 ft.
7	3	Regal Gas Syndicate P. E. Reicheld No. 3	1,000 ft. N. of S. line 200 ft. E. of W. line	1933	616	882	Onondaga	728 773	Clinton... Grimsby	35	385	19	Fresh water at 37 ft.
8	3	Dominion Natural Gas Co. J. H. Schweyer No. 1	1,250 ft. S. of N. line 900 ft. E. of W. line	1927	643	912	Onondaga	769 808	Clinton... Grimsby.	10 36	360	26	
8	3	P. Stier No. 2	1,700 ft. N. of S. line 400 ft. E. of W. line.	1929	618	900	Onondaga	785	.....	221	380	16	Fresh water at 34 ft. Black water at 470 ft.
8	3	P. Stier No. 3	100 ft. N. of S. line 500 ft. W. of E. line	1930	628	903	Onondaga	779 803	Clinton... Grimsby	15	335	37	Fresh water at 42 ft. Black water at 473 ft.
8	3	Superior Gas Syndicate Ed. Schweyer No. 1.	.....	1933	635	898	Onondaga	755 806	Clinton... Grimsby.	20 9	270	18	Sulphur water at 40 ft.
8	3	Ed Schweyer No. 2	100 ft. S. of N. line 1,000 ft. W. of E. line	1934	638	900	Onondaga	756 800	Clinton... Grimsby.	10 121	270	27	Fresh water at 45 ft.
9	3	Dominion Natural Gas Co. Wm. Hartwick No. 1	1,400 ft. S. of N. line 700 ft. E. of W. line.	1928	633	901	Onondaga	.....	.....	Dry hole.	.....	30	
9	3	Mrs. H. J. Roth No. 2	500 ft. S. of N. line 350 ft. W. of E. line	1928	638	905	Onondaga	769 797	Clinton... Grimsby	39	310	23	Fresh water at 35 ft. Black water at 454 ft.
9	3	Superior Gas Syndicate Mrs. M. Roth No. 1.	NW. Corner	1934	641	938	Onondaga	769 897	Clinton... Whirlpool	200 20	240	28	Sulphur water at 35 ft.
9	3	Mrs. M. Roth No. 2	1,000 ft. S. of N. line 50 ft. E. of W. line	1934	638	898	Onondaga	769 797	Clinton... Grimsby.	25 20	295	41	Sulphur water at 50 ft.
9	3	W. J. Hartwick No. 1	50 ft. S. of N. line 800 ft. E. of W. line.	1934	644	906	Onondaga	834	Grimsby.	30	325	33	Sulphur water at 550 ft.
9	3	Arnold	SE. Corner	.....	636	.....	.....	.....	.....	300	.....	.....	
10	3	Kelly Gas Syndicate P. Schurr No. 1	375 ft. S. of N. road 375 ft. E. of W. line	1937	640	932	Onondaga	758 803 888	Clinton... Grimsby Whirlpool	28	340	26	Fresh water at 39 ft., rose 23 ft.

10	3	Dominion Natural Gas Co....	2,000 ft. S. of N. line.....	1931	625	893	Onondaga	757	Clinton...	14	312	25	Water at 46 d 525 ft.
		P. Shurr No. 1.....	700 ft. W. of E. line.....	.....	.....	.....	.....	801	Grimsby				
10	3	Dominion Natural Gas Co....	900 ft. N. of S. line.....	1930	626	902	Onondaga	752	Clinton...	45	278	28	Water at 556 ft.
		Wm. Mehlenbacher No. 1...	50 ft. E. of W. line.....	.....	.....	.....	.....	810	Grimsby				
11	3	Dominion Natural Gas Co....	2,150 ft. N. of S. line.....	1930	630	903	Onondaga	.....	.....	Dry hole.	.....	27	Fresh water at 30 and 115 ft.
		Jacob Nagel No. 1.....	250 ft. E. of W. line.										Black water at 472 ft.
11	3	Dominion Natural Gas Co....	1,400 ft. N. of S. line.....	1930	635	905	Onondaga	761	Clinton...	104	300	21	Fresh water at 25 ft.
		Jacob Fry No. 1.....	1,000 ft. W. of E. line.....	.....	.....	.....	.....	902	Whirlpool				
11	3	Kelly Gas Syndicate.....	550 ft. S. of N. road.....	1937	638	887	Onondaga	748	Clinton...	75	330	25	Water at 65 ft.
		W. Sherk No. 1.....	1,400 ft. W. of E. line.....	.....	.....	.....	.....	790	Grimsby				
11	3	W. Sherk No. 2.....	525 ft. S. of N. road.....	1937	648	893	Onondaga	753	Clinton...	76	330	23	Water at 36 ft., rose 21 ft.
			550 ft. W. of E. line.										
11	3	W. Sherk No. 3.....	1,125 ft. S. of N. road.....	1937	640	890	Onondaga	.....	.....	Dry hole	.....	26	Water at 65 ft., rose 56 ft.
			975 ft. W. of E. line.										
12	3	Dominion Natural Gas Co....	900 ft. N. of S. line.....	1930	646	900	Onondaga	761	Clinton...	15	279	19	Fresh water at 35 ft.
		Jacob Nagel No. 1.....	300 ft. E. of W. line.....	.....	.....	.....	.....	803	Grimsby				Black water at 555 ft.
12	3	Superior Gas Syndicate.....	1,900 ft. N. of S. line.....	1932	650	895	Onondaga	752	Clinton...	66	320	22	Sulphur water at 40 ft.
		Albert Nagel No. 1.....	400 ft. W. of E. line.....	.....	.....	.....	.....	798	Grimsby				
12	3	Albert Nagel No. 2.....	500 ft. N. of S. line.....	1932	653	900	Onondaga	765	Clinton...	24	325	18	Sulphur water at 48 ft.
			550 ft. W. of E. line.....	.....	.....	.....	.....	806	Grimsby				
12	3	Ideal Gas Syndicate.....	375 ft. S. of N. road.....	1939	655	880	Onondaga	750	Clinton...	4	325	12	Fresh water at 70 ft.
		Norman Hartwick No. 1....	1,550 ft. W. of E. road....	.....	.....	.....	.....	785	Grimsby.	20			
12	3	Norman Hartwick No. 2....	775 ft. S. of N. road.....	1939	648	888	Onondaga	756	Clinton...	178	420	16	Fresh water at 30 to 50 ft.
			680 ft. W. of E. road....	.....	.....	.....	.....	780	Grimsby				
13	3	Ideal Gas Syndicate.....	250 ft. E. of W. road.....	1939	653	900	Onondaga	774	Clinton...	15	315	19	Fresh water at 30 ft.
		Geo. Featherstone.....	800 ft. S. of N. road.										Sulphur water at 60 ft.
15	3	Ideal Gas Syndicate.....	750 ft. S. of N. line.....	1932	655	880	Onondaga	738	Clinton...	195	250	18	Sulphur water at 170 ft.
		J. I. Hartwick No. 1.....	600 ft. W. of E. line.....	.....	.....	.....	.....	771	Grimsby				
15	3	J. I. Hartwick No. 2.....	300 ft. S. of N. line.....	1932	650	872	Onondaga	781	Grimsby.	25	170	18	Sulphur water at 35 ft.
			750 ft. E. of W. line.....	.....	.....	.....	.....	821					
	3	Alex. McDougall.....	1,150 ft. S. of N. line.....	1933	652	885	Onondaga	.....	.....	Dry hole.	.....	13	Abandoned.
		J. Hartwick No. 1.....	550 ft. E. of W. line.										
	3	Ideal Gas Syndicate.....	NW. Corner.....	1932	659	873	Onondaga	757	Clinton...	55	140	14	Sulphur water at 20 ft.
		Mrs. J. Moerschfelder No. 1.											
		Sweets' Corners Gas Syndicate	50 ft. N. of S. line.....	1932	659	904	Onondaga	729	Clinton...	24	350	9	Sulphur water at 54 ft.
		Wm. Holland No. 1.....	1,000 ft. W. of E. line.....	.....	.....	.....	.....	758	Clinton...				

Wells in Rainham Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
18	3	Wm. Holland No. 2	450 ft. N. of S. line 50 ft. E. of W. line	1932	666	922	Onondaga	744 864	Clinton... Whirlpool	68	325	5	Sulphur water at 64 ft.
18	3	Wm. Holland No. 3	1,300 ft. N. of S. line 50 ft. E. of W. line	1932	663	952	Onondaga	789 912	Clinton... Whirlpool	30	305	16	Sulphur water at 48 ft.
18	3	Dominion Natural Gas Co. B. Warner No. 1.		1907		851	Onondaga	735 765	Clinton... Grimsby			20	Show of gas.
1	4	Ideal Gas Syndicate J. Rhora No. 1	650 ft. S. of N. line 1,000 ft. E. of W. line.	1935	658	913	Onondaga			Dry hole.		25	Fresh water at 83 ft.
1	4	Ideal Gas Syndicate J. Rhora No. 2	950 ft. S. of N. line 50 ft. W. of E. line	1935	658	963	Onondaga	804 910	Clinton... Whirlpool	72	335	18	Sulphur water at 82 ft.
1	4	J. Rhora No. 3	1,700 ft. S. of N. line 1,000 ft. W. of E. line	1935	663	942	Onondaga	842 853	Grimsby.	103	350	19	Sulphur water at 70 ft.
1	4	J. Rhora No. 4		1935	658	922	Onondaga			Dry hole.			
1	4	Ideal Gas Syndicate Jacob Rhora No. 5	1,500 ft. N. of S. road 1,000 ft. E. of W. road.	1935	668	962	Onondaga	800	Clinton...	68	330	8	Fresh water at 85 ft.
1	4	Ideal Gas Syndicate Jacob Rhora No. 6	800 ft. N. of S. road 1,800 ft. E. of W. road.	1935	665	964	Onondaga	805	Clinton...	21	320	6	
1	4	Jacob Rhora No. 7	100 ft. N. of S. road 1,000 ft. E. of W. road	1936	667	949	Onondaga	820 841	Clinton... Grimsby	58	380		
2	4	Dominion Natural Gas Co. F. B. Atkinson No. 1	1,100 ft. S. of N. line 1,100 ft. W. of E. line	1927	654	960	Onondaga	777 906	Clinton... Whirlpool	39	405	13	Fresh water at 23 and 41 ft. Black water at 482 ft.
2-3	4	Dominion Natural Gas Co. A. Weaver No. 1.		1929		959	Onondaga	793 897	Clinton... Whirlpool	272	385	2	Fresh water at 60 ft. Black water at 525 ft.
3	4	W. Stewart No. 1	750 ft. S. of N. line 1,000 ft. W. of E. line.	1925	647	932	Onondaga	877	Whirlpool	25	390	12	Fresh water at 25 ft

3	4	W. Stewart No. 2	750 ft. S. of N. line..... 50 ft. E. of W. line.....	1926	645	905	Onondaga	752 793	Clinton... Grimsby	272	430	2	Fresh water at 35 ft.
3	4	W. Stewart No. 3	2,000 ft. S. of N. line..... 750 ft. W. of E. line.....	1929	629	886	Onondaga	787 795	.....	198	473	2	Fresh water at 8 ft. Black water at 510 ft.
4	4	F. Otterman No. 1	1,000 ft. S. of N. line..... 400 ft. E. of W. line.....	1926	647	923	Onondaga	756 880	Clinton... Whirlpool	89	410	9	Fresh water at 42 ft. Black water at 470 ft.
4	4	J. Nauman No. 2	750 ft. S. of N. line..... 50 ft. W. of E. line.....	1926	653	909	Onondaga	760 797	Clinton... Grimsby	55	410	14	Fresh water at 40 and 50 ft. Black water at 490 ft.
4	4	R. Nauman No. 1	.....	1929	.....	922	Onondaga	776 817	Clinton... Grimsby.	5 55	473	21	Fresh water at 30 and 80 ft. Black water at 532 ft.
4	4	J. C. Nauman No. 1	.....	1929	.....	905	Onondaga	780 803	Clinton... Grimsby	33	456	14	
5	4	Haldimand Gas Fields Syndicate.	1,600 ft. S. of N. line..... 600 ft. W. of E. line.	1931	646	895	Onondaga	.....	.....	Dry hole.	.....	16	Sulphur water at 65 ft.
5	4	Levi Drehner No. 1	2,500 ft. S. of N. line..... 150 ft. W. of E. line.	1931	653	909	Onondaga	.....	.....	230	420	18	Sulphur water at 82 ft.
5	4	Levi Drehner No. 2	1,200 ft. N. of S. line..... 600 ft. W. of E. line.	1931	652	906	Onondaga	.....	.....	Dry hole.	.....	19	Sulphur water at 72 ft.
5	4	Dominion Natural Gas Co....	.....	.....	645	.....	Onondaga	.....	.....	60	.....	.....	
5	4	Dominion Natural Gas Co....	.....	1906	.....	831	Onondaga	.....	.....	55	.....	8	
5	4	Haldimand Gas Fields Syndicate. Jos. Winger No. 1.	2,000 ft. N. of S. road..... 450 ft. E. of W. line.....	1935	643	894	Onondaga	761 803	Clinton...	48	350	10	Fresh water at 60 ft.
6	4	Haldimand Gas Fields Syndicate. Amon Birk No. 1.	750 ft. N. of S. line..... 700 ft. E. of W. line.	1932	654	909	Onondaga	795	Clinton...	74	270	22	Water at 85 ft.
6	4	Haldimand Gas Fields Syndicate. Joseph Sitter No. 1.	1,200 ft. N. of S. line..... 50 ft. W. of E. line.	1931	647	901	Onondaga	.....	.....	62	375	5	Sulphur water at 63 ft.
6	4	Joseph Sitter No. 2	1,300 ft. N. of S. line..... 1,000 ft. E. of W. line.	1931	654	905	Onondaga	.....	.....	90	415	20	Sulphur water at 68 ft.
6	4	Henry Gable No. 3	500 ft. N. of S. line..... 100 ft. W. of E. line.	1931	647	900	Onondaga	.....	.....	300	415	22	Sulphur water at 45 ft.
6	4	Dominion Natural Gas Co....	SW. Corner.....	1927	.....	916	Onondaga	777	Clinton...	25	415	.....	

Wells in Rainham Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
6	4	Dominion Natural Gas Co....	1,000 ft. N. of S. line..... 600 ft. W. of E. line.	1928	650	996	Onondaga	772	Clinton...	55	410	.....	
6	4	Ladd and Knight..... Reicheld No. 2.....	200 ft. S. of N. road..... 400 ft. W. of E. road.	1935	664	896	Onondaga	.....	.....	Dry hole.	.....	18	Fresh water at 52 ft. Black water at 375 ft.
7	4	Dominion Natural Gas Co.... Mary J. Roth No. 1.....	900 ft. N. of S. line..... 750 ft. W. of E. line.	1927	650	909	Onondaga	766	Clinton...	30	390	16	Fresh water at 59 ft. Black water at 468 ft.
7	4	Dominion Natural Gas Co.... R. Everley No. 2.	SW. Corner.....	1927	643	905	Onondaga	761 780	Clinton... Grimsby	280	430	22	Fresh water at 61 ft. Black water at 478 ft.
7	4	L. P. Mytinger..... Fred Nablo No. 1.....	600 ft. S. of N. road..... 800 ft. E. of W. road.	1935	668	891	Onondaga	787	Grimsby.	18	385	14	Sulphur water at 78 ft.
7	4	Fred Nablo No. 2.....	2,150 ft. S. of N. road..... 1,450 ft. E. of W. road.....	1935	661	896	Onondaga	763 797	Clinton... Grimsby	18	365	17	Sulphur water at 68 ft.
7	4	Fred Nablo No. 3.....	1,600 ft. S. of N. road..... 200 ft. E. of W. road.	1935	662	899	Onondaga	773	Clinton...	28	360	18	Sulphur water at 61 ft.
7	4	Ladd and Knight..... Nagel and Best No. 1.....	300 ft. S. of N. road..... 900 ft. E. of W. road.	1935	666	889	Onondaga	.....	.....	50	365	18	Fresh water at 55 ft. Black water at 85 and 457 ft.
8	4	Dominion Natural Gas Co....	500 ft. N. of S. line..... 750 ft. E. of W. line.	1927	653	914	Onondaga	761	Clinton...	68	440	.....	
8	4	Ideal Gas Syndicate..... N. Kiefer No. 1.....	1,650 ft. E. of W. line..... 2,350 ft. S. of N. road.....	1938	659	877	Onondaga	770 805	Clinton... Grimsby	.....	335	26	Fresh water at 50 ft., rose 20 ft.
8	4	N. Kiefer No. 2.....	425 ft. W. of E. line..... 1,100 ft. S. of N. road.....	1938	658	863	Onondaga	740 782	Clinton... Grimsby	68	365	20	Fresh water at 48 ft., rises 24 ft.
8	4	N. Kiefer No. 3.....	700 ft. E. of W. line..... 1,600 ft. S. of N. road.....	1938	659	886	Onondaga	747 794	Clinton... Grimsby	40	340	22	Fresh water at 35 ft., rises 24 ft.
8	4	N. Kiefer No. 4.....	400 ft. E. of W. line..... 2,400 ft. S. of N. road.	1938	660	895	Onondaga	.....	.....	Dry hole.	.....	20	Fresh water at 45 ft.

9	4	Ideal Gas Syndicate K. Schumacher No. 1	325 ft. S. of N. road 100 ft. E. of W. line	1938	666	897	Onondaga	760 783	Clinton... Grimsby	40	380	10	Fresh water at 30 ft. Black water at 80 ft.
9	4	K. Schumacher No. 2	1,050 ft. S. of N. road 650 ft. E. of W. line.	1938	655	876	Onondaga			Dry hole.		12	Sulphur water at 60 ft.
9	4	Dominion Natural Gas Co.... J. Wm. Schweyer No. 1	1,000 ft. N. of S. line 600 ft. W. of E. line.	1928	650	896	Onondaga	772	Clinton...	52	445	35	Fresh water at 38 ft. Black water at 359 ft.
9	4	Dominion Natural Gas Co.... J. Wm. Schweyer No. 2	2,200 ft. N. of S. line 1,000 ft. W. of E. line.	1928	653	887	Onondaga			Dry hole.		26	Fresh water at 53 ft.
9	4	Thos. H. Schweyer	1,000 ft. N. of S. line 50 ft. E. of W. line	1927	656	906	Onondaga	757 800	Clinton... Grimsby.	90 30		51	Fresh water at 67 ft. Black water at 466 ft.
9	4	Haldimand Gas Fields Syndicate. J. Fess No. 2.	NE. Corner	1927	666	880	Onondaga			Dry hole.		15	
9	4	?	1,650 ft. S. of N. line 50 ft. W. of E. line.		654		Onondaga			100			
10	4	Dominion Natural Gas Co.... John H. Schweyer No. 1	1,000 ft. N. of S. line 650 ft. W. of E. line.	1928	637	881	Onondaga	734	Clinton...	500	465	12	
10	4	John H. Schweyer No. 2	2,000 ft. N. of S. line 100 ft. W. of E. line.	1928	651	880	Onondaga	752	Clinton...	65	472	5	Fresh water at 14 ft. Black water at 440 ft.
10	4	Mary J. Roth	1,500 ft. N. of S. line 500 ft. E. of W. line.	1928	647	882	Onondaga	720	Clinton...	185	420	16	Fresh water at 31 ft. Black water at 445 ft.
10	4	Haldimand Gas Fields Syndicate.	60 ft. S. of N. line 600 ft. W. of E. line.	1927	651	900	Onondaga			300	425	17	
10	4	?	1,300 ft. S. of N. line 500 ft. W. of E. line.		656		Onondaga			25			
11	4	Kelly Gas Syndicate N. Bacher No. 1	1,150 ft. N. of S. road 340 ft. W. of E. line	1937	662	896	Onondaga	776 796	Clinton... Grimsby	115	350	16	Water at 45 ft., rose 15 ft.
11	4	N. Bacher No. 2	300 ft. N. of S. road 325 ft. W. of E. line	1937	658	903	Onondaga	780 808	Clinton... Grimsby	30	330	11	Water at 61 ft., rose 33 ft.
11	4	?	900 ft. S. of N. line 50 ft. E. of W. line.		653		Onondaga						
12	4	Dominion Natural Gas Co.... Roy Fehram No. 1.	1,600 ft. N. of S. line 600 ft. E. of W. line	1930	665	897	Onondaga	757 802	Clinton...	43	458	10	Fresh water at 25 ft.
12	4	Roy Fehram No. 2	1,200 ft. N. of S. line 50 ft. W. of E. line.	1930	662	899	Onondaga			Dry hole.		10	Fresh water at 54 ft.
12	4	Levi Fehram No. 1	50 ft. N. of S. line 350 ft. W. of E. line	1907	656	914	Onondaga	762 797	Clinton...			12	Abandoned.

Wells in Rainham Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
12	4	?	50 ft. S. of N. line..... 600 ft. E. of W. line.	.....	654	.....	.....	.....	.....	50	.....	.....	
13	4	Dominion Natural Gas Co....	.....	1907	.....	893	Onondaga	755 785	Clinton... Grimsby	.....	.....	18	
13	4	Dominion Natural Gas Co....	.....	1907	.....	888	Onondaga	.....	Clinton...	.....	.....	15	Show of gas.
13	4	?	50 ft. N. of S. line..... 600 ft. W. of E. line.	.....	649	.....	.....	.....	.....	221	.....	.....	Abandoned.
15	4	Ideal Gas Syndicate..... Fulson No. 1.....	50 ft. N. of S. line..... 500 ft. W. of E. line.	1932	653	868	Onondaga	747	Clinton...	23	315	13	Sulphur water at 18 ft.
15	4	Nagel Bros. No. 1.....	900 ft. N. of S. line..... 350 ft. E. of W. line.....	1932	649	874	Onondaga	726 779	Clinton... Grimsby	45	390	28	Sulphur water at 31 ft.
15	4	Nagel Bros. No. 2.....	1,800 ft. N. of S. line..... 50 ft. E. of W. line.....	1932	648	862	Onondaga	732 776	Clinton... Grimsby	33	340	25	Sulphur water at 30 ft.
1	5	Dominion Natural Gas Co.... A. Schweyer No. 1.....	1,300 ft. S. of N. line..... 500 ft. E. of W. line.....	1926	666	903	Onondaga	785 806	Clinton... Grimsby	272	.....	11	Fresh water at 40 ft. Black water at 480 ft.
1	5	Dominion Natural Gas Co....	50 ft. N. of S. line..... 400 ft. W. of E. line.....	1926	658	917	Onondaga	822 854	Grimsby.	17	.....	19	
1	5	James Lee No. 2.....	1,650 ft. N. of S. line..... 750 ft. W. of E. line.	1926	663	912	Onondaga	.....	.....	185	455	14	Fresh water at 38 ft. Black water at 471 ft.
1-2	5	Dominion Natural Gas Co....	.....	1926	.....	906	Onondaga	.....	.....	Dry hole.	.....	14	Fresh water at 20 and 58 ft. Black water at 457 ft.
2	5	Wm. A. Lee No. 1.....	50 ft. N. of S. line..... 1,000 ft. W. of E. line.....	1926	651	952	Onondaga	775 898	Clinton... Whirlpool	280	420	9	Fresh water at 25 ft.
2	5	Wm. A. Lee No. 2.....	1,900 ft. N. of S. line..... 950 ft. E. of W. line.....	1926	669	909	Onondaga	765 806	Clinton...	440	430	10	Fresh water at 30 and 59 ft. Black water at 468 ft.
2	5	A. Schweyer No. 2.....	1,350 ft. S. of N. line..... 50 ft. E. of W. line.	1926	667	906	Onondaga	.....	.....	Dry hole.	.....	14	

2	5	Dominion Natural Gas Co....	.....	1926	.....	917	Onondaga	822	Clinton...	12	.....	19	Fresh water at 35 ft.
		J. C. Lee No. 1.....	.....	.....	.....	.....	.....	854	Grimsby.	5			
3	5	Fred Otterman No. 2.....	900 ft. N. of S. line.....	1926	662	936	Onondaga	774	Clinton...	252	390	11	Fresh water at 24 and 43 ft.
			50 ft. E. of W. line.....	.....	.....	.....	.....	894	Whirlpool				Black water at 472 ft.
3	5	Erie Gas and Oil Syndicate...	1,900 ft. S. of N. line.....	1925	671	895	Onondaga	.....	.....	63	400	6	Sulphur water at 40 ft.
		Peter Bacher No. 8.....	50 ft. E. of W. line.										
3	5	C. Schumacher No. 9.....	1,500 ft. S. of N. line.....	1925	658	920	Onondaga	.....	.....	74	400	4	Fresh water at 40 ft.
			1,000 ft. E. of W. line.										
4	5	Dominion Natural Gas Co....	1,000 ft. N. of S. line.....	1925	659	900	Onondaga	748	Clinton...	25	400	9	Sulphur water at 50 ft.
		J. Nauman No. 1.....	900 ft. W. of E. line.....	.....	.....	.....	.....	779	Grimsby				
4	5	H. Nablo No. 1.....	1,800 ft. N. of S. line.....	1925	664	895	Onondaga	763	Clinton...	414	350	11	
			1,000 ft. W. of E. line.										
4	5	Erie Gas and Oil Syndicate...	50 ft. S. of N. line.....	1925	670	900	Onondaga	750	Clinton...	98	425	6	Fresh water at 20 ft.
		C. Schumacher No. 1.....	1,000 ft. W. of E. line.....	.....	.....	.....	.....	874	Whirlpool				
5	5	Dominion Natural Gas Co....	300 ft. N. of S. line.....	.....	644	831	Onondaga	750	Clinton...	.....	.....	8	
		F. Otterman.....	600 ft. E. of W. line.....	.....	.....	.....	.....	790	Grimsby				
6	5	Erie Gas and Oil Syndicate...	2,100 ft. N. of S. line.....	1925	669	915	Onondaga	752	Clinton...	71	425	11	Sulphur water at 40 ft.
		J. Mehlenbacher No. 3.....	300 ft. W. of E. line.....	.....	.....	.....	.....	789	Whirlpool				
6	5	Erie Gas and Oil Syndicate...	1,900 ft. N. of S. line.....	1925	657	915	Onondaga	740	Clinton...	36	390	17	Sulphur water at 60 ft.
		Nablo No. 4.....	50 ft. E. of W. line.....	.....	.....	.....	.....	868	?				
6	5	H. Nablo.....	50 ft. N. of S. line.....	.....	667	.....	Onondaga	.....	.....	.....	.....	.....	
			650 ft. E. of W. line.										
7	5	Erie Gas and Oil Syndicate...	50 ft. S. of N. line.....	1925	670	925	Onondaga	.....	.....	34	390	28	Sulphur water at 60 ft.
		Ed. Schier No. 6.....	1,000 ft. W. of E. line.										
7	5	Cyclops Gas and Oil Syndicate	200 ft. N. of S. line.....	1933	668	880	Onondaga	746	Clinton...	25	280	14	Sulphur water at 105 ft.
		E. G. Mehlenbacher No. 7..	800 ft. W. of E. line.....	.....	.....	.....	.....	793	Grimsby				
7	5	Rainham Gas and Oil Syndicate.	SE. Corner.....	.....	.....	880	Onondaga	.....	.....	Dry hole.	.....	16	Sulphur water at 30 ft.
		E. Mehlenbacher No. 1.											
8	5	Union Gas Co. No. 195.....	1,500 ft. N. of S. line.....	1931	674	886	Onondaga	770	Clinton...	30	240	8	Fresh water at 59 ft.
			850 ft. E. of W. line.										
8	5	Dominion Natural Gas Co....	700 ft. N. of S. line.....	1931	669	876	Onondaga	750	Clinton...	20	412	12	Fresh water at 33 ft.
		Jacob Rohrbach No. 2.....	550 ft. W. of E. line.										Black water at 500 ft.
8	5	Rainham Gas and Oil Syndicate.	SW. Corner.....	1926	666	880	Onondaga	.....	.....	Dry hole.	.....	16	
		E. Mehlenbacher No. 1.											

Wells in Rainham Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
8	5	Cyclops Gas Syndicate..... E. Mehlenbacher No. 2.....	1,600 ft. N. of S. line..... 150 ft. E. of W. line.....	1933	675	885	Onondaga	747 791	Clinton... Grimsby	26	270	6	Sulphur water at 68 ft.
9	5	Dominion Natural Gas Co.... Jacob Rohrbach No. 1.....	1,250 ft. N. of S. line..... 300 ft. E. of W. line.....	1931	673	882	Onondaga	760 788	Clinton... Grimsby	171	440	13	Fresh water at 50 ft. Black water at 500 ft.
9	5	Jacob Rohrbach No. 3.....	2,000 ft. N. of S. line..... 100 ft. E. of W. line.....	1931	671	876	Onondaga	749 790	Clinton... Grimsby	262	473	12	Fresh water at 30 ft. Black water at 500 ft.
9	5	Dominion Natural Gas Co.... W. E. Rohrbach No. 1.....	1,850 ft. N. of S. line..... 575 ft. W. of E. line.....	1931	666	872	Onondaga	739 788	Clinton... Grimsby	116	456	22	Fresh water at 37 ft.
9	5	Union Gas Co., No. 202.....	1,600 ft. N. of S. line..... 500 ft. W. of E. line.....	1931	664	873	Onondaga	768 780	Grimsby.	38	230	22	Fresh water at 33 ft.
9	5	Union Gas Co., No. 203.....	1,000 ft. N. of S. line..... 200 ft. W. of E. line.	1931	665	867	Onondaga	786	Grimsby.	17	320	18	Sulphur water at 83 ft.
9	5	?	1,200 ft. S. of N. line..... 350 ft. W. of E. line.	.....	668	.....	.....	.....	.....	200	.....	.....	
9	5	?	1,250 ft. S. of N. line..... 500 ft. E. of W. line.	.....	671	.....	.....	.....	.....	20	.....	.....	
9	5	?	300 ft. S. of N. line..... 900 ft. E. of W. line.	.....	665	.....	.....	.....	.....	.....	.....	.....	
10	5	Haldimand Gas Fields Syndicate.	1,000 ft. N. of S. line..... 1,000 ft. E. of W. line.	1927	659	900	Onondaga	.....	Grimsby. Whirlpool	300	420	15	
10	5	Haldimand Gas Fields Syndicate. Wm. Cusler No. 5.	1,200 ft. S. of N. line..... 800 ft. W. of E. line.	1927	659	900	Onondaga	.....	Clinton... Grimsby Whirlpool	150	425	24	
10	5	Haldimand Gas Fields Syndicate. Fred McKay No. 7.	1,700 ft. S. of N. line..... 300 ft. E. of W. line.	1927	663	900	Onondaga	.....	Clinton... Whirlpool	40	425	28	Sulphur water at 40 ft.
10	5	?	2,000 ft. N. of S. line..... 1,000 ft. W. of E. line,	.....	658	.....	.....	.....	.....	200	.....	.....	

10	5	?	NW. Corner		663					400			
10	5	?	NE. Corner		658					75			
11	5	Haldimand Gas Fields Syndicate. Walter Kinnett No. 4	300 ft. N. of S. line..... 500 ft. E. of W. line.	1927	651	890	Onondaga			100	425	15	
11	5	Haldimand Gas Fields Syndicate. E. N. Rays No. 6.	600 ft. N. of S. line..... 600 ft. W. of E. line.	1927	651	870	Onondaga		Clinton... Grimsby	250	450	16	Sulphur water at 35 ft.
11	5	E. N. Rays No. 11	1,900 ft. N. of S. line..... 1,000 ft. E. of W. line.	1927	656	866	Onondaga		Clinton...	40	425	28	Sulphur water at 35 ft.
11	5	?	1,100 ft. S. of N. line..... 300 ft. E. of W. line.		655		Onondaga			40			
12	5	Haldimand Gas Fields Syndicate. Jacob Smelser No. 9.	1,200 ft. N. of S. line..... 250 ft. E. of W. line.	1927	658	878	Onondaga		Clinton...	40	425	4	Sulphur water at 35 ft.
1	6	Standard Gas and Oil Syndicate. Anthony Harris No. 1.	SW. Corner	1932	665	896	Onondaga	770 806	Clinton... Grimsby	440	400	14	Fresh water at 42 ft. Black water at 55 ft.
1	6	Anthony Harris No. 2	50 ft. N. of S. line..... 1,000 ft. W. of E. line.	1933	667	893	Onondaga			Dry hole.		14	Fresh water at 52 ft.
1	6	Anthony Harris No. 3	900 ft. N. of S. line..... 750 ft. W. of E. line.	1933	672	898	Onondaga			Dry hole.		9	Fresh water at 18 ft.
1	6	Anthony Harris No. 4	2,000 ft. N. of S. line..... 700 ft. E. of W. line.....	1933	674	898	Onondaga	757 774	Clinton... Clinton	27	375	15	Black water at 48 ft.
1	6	Dominion Natural Gas Co.... Rutherford No. 1	1,400 ft. S. of N. line..... 850 ft. W. of E. line.	1927	674	897	Onondaga	778	Clinton...	30	372	17	Fresh water at 41 ft. Black water at 468 ft.
1	6	Standard Gas Syndicate..... C. Harris No. 5	500 ft. N. of S. road..... 800 ft. E. of W. road.	1939	663	888	Onondaga			Dry hole.		10	Sulphur water at 74 ft.
2	6	Erie Gas Syndicate..... P. Bacher No. 11.	SW. Corner	1927	675	917	Onondaga		Clinton... Grimsby	17	400	12	Sulphur water at 60 ft.
2	6	W. C. Patterson..... P. Bier No. 1	1,350 ft. S. of N. road..... 700 ft. W. of E. line.	1935	679	893	Onondaga			Dry hole.		27	Fresh water at 50 ft. Sulphur water at 472 ft.
2	6	W. C. Patterson..... W. Reicheld No. 3	2,000 ft. S. of N. road..... 100 ft. W. of E. line.	1935	685	898	Onondaga			Dry hole.		12	Fresh water at 55 ft. Sulphur water at 470 ft.
3	6	W. Reicheld No. 4	2,300 ft. S. of N. road..... 650 ft. E. of W. line.....	1936	683	926	Onondaga	759 892	Clinton... Whirlpool	63	380	18	Fresh water at 50 ft. Sulphur water at 455 ft.
3	6	W. Reicheld No. 1	300 ft. S. of N. road..... 500 ft. E. of W. line.	1935	678	883	Onondaga			55	440	23	Fresh water at 40 ft. Sulphur water at 472 ft.

Wells in Rainham Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
3	6	W. Reicheld No. 2	1,500 ft. S. of N. road..... 550 ft. E. of W. line.....	1935	683	891	Onondaga	776 788	Clinton... Grimsby	150	450	22	Fresh water at 47 ft. Sulphur water at 463 ft.
3	6	G. Fess No. 1	300 ft. S. of N. road..... 350 ft. W. of E. line.	1935	677	881	Onondaga	.....	.....	37	450	18	Fresh water at 40 ft. Sulphur water at 440 ft.
3	6	G. Fess No. 2	1,300 ft. S. of N. road..... 250 ft. W. of E. line.	1935	676	884	Onondaga	.....	.....	47	400	11	Fresh water at 36 ft. Sulphur water at 437 ft.
3	6	Erie Gas Syndicate..... Mrs. M. Rea No. 12.....	1,250 ft. S. of N. line..... 250 ft. W. of E. line.	1927	676	910	Onondaga	.....	.....	57	.....	12	Sulphur water at 60 ft.
3	6	Erie Gas Syndicate.....	NE. Corner.....	1927	677	930	Onondaga	.....	.....	90	400	12	Water at 60 ft.
4	6	W. C. Patterson..... G. Fess No. 3.....	1,750 ft. S. of N. line..... 750 ft. E. of W. line.	1934	664	872	Onondaga	.....	.....	Dry hole.	.....	.....	
4	6	Monarch Gas Syndicate..... G. Fess No. 1.....	2,300 ft. S. of N. road..... 550 ft. W. of E. line.....	1936	677	921	Onondaga	775 881	Clinton... Whirlpool	132	500	23	Fresh water at 45 ft.
5	6	W. C. Patterson..... C. Schumacher No. 1.....	1,300 ft. N. of S. line..... 200 ft. W. of E. line.	1935	684	892	Onondaga	.....	.....	Dry hole.	.....	10	Sulphur water at 75 ft.
5	6	S. Schumacher No. 2.....	500 ft. S. of N. line..... 50 ft. E. of W. line.	1936	668	893	Onondaga	.....	.....	Dry hole.	.....	16	Fresh water at 55 ft. Sulphur water at 455 ft.
5	6	W. C. Patterson..... Walter Ebert No. 1.....	1,800 ft. S. of N. road..... 250 ft. W. of E. line.	1936	688	885	Onondaga	.....	.....	Dry hole.	.....	17	Fresh water at 70 ft.
5	6	Monarch Gas Syndicate..... W. Ebert No. 2.....	2,000 ft. S. of N. road..... 350 ft. E. of W. line.	1936	685	892	Onondaga	787	Grimsby.	67	467	17	Fresh water at 55 ft.
6	6	Erie Gas Syndicate..... C. Reicheld No. 2.	SE. Corner.....	1925	676	880	Onondaga	.....	.....	Dry hole.	.....	13	Sulphur water at 50 ft.
6	6	C. Reicheld.....	1,700 ft. N. of S. line..... 50 ft. W. of E. line.	.....	666	.....	.....	.....	.....	35	.....	.....	
7	6	Pope and Ryan..... P. E. Reicheld No. 1.....	1,000 ft. S. of N. line..... 1,000 ft. E. of W. line.....	1933	669	867	Onondaga	738 757	Clinton... Grimsby	26	335	14	Fresh water at 35 ft.

7	6	P. E. Reicheld No. 2	1,800 ft. S. of N. line 400 ft. E. of W. line	1933	664	860	Onondaga	746 786	Clinton... Grimsby	50	425	24	Fresh water at 40 ft.
7	6	Erie Gas and Oil Syndicate... P. E. Reicheld No. 5	2,000 ft. N. of S. line 800 ft. E. of W. line.	1925	662	905	Onondaga	.....	.....	236	390	27	Sulphur water at 60 ft.
7	6	P. E. Reicheld No. 7	450 ft. N. of S. line 50 ft. W. of E. line.	1925	669	880	Onondaga	.....	.....	Dry hole.	.....	15	Sulphur water at 60 ft.
7	6	Reicheld	50 ft. S. of N. line 500 ft. E. of W. line.	.....	668	.....	Onondaga	.....	.....	76	.....	.....	
8	6	W. C. Patterson Geo. Winger No. 1.	NW. Corner	1935	676	907	Onondaga	749 870	Clinton... Whirlpool	.....	410	12	Fresh water at 102 ft. Sulphur water at 450 ft.
8	6	A. Reicheld	900 ft. N. of S. line 500 ft. W. of E. line.	.....	664	.....	Onondaga	.....	.....	20	.....	.....	
9	6	Haldimand Gas Fields Syndicate. Mrs. E. Smith No. 10.	SE. Corner	1927	660	860	Onondaga	.....	.....	486	425	2	Sulphur water at 30 ft.
9	6	?	1,450 ft. N. of S. line 650 ft. W. of E. line.	.....	665	.....	Onondaga	.....	.....	60	.....	.....	
9	6	?	800 ft. N. of S. line 500 ft. E. of W. line.	.....	661	.....	Onondaga	.....	.....	60	.....	.....	
10	6	Haldimand Gas Fields Syndicate. F. Mehlenbacher No. 8	50 ft. N. of S. line 600 ft. E. of W. line.	1927	658	865	Onondaga	.....	Clinton...	150	425	17	Sulphur water at 30 ft.
1	7	W. C. Patterson Arthur Moyer No. 1	350 ft. N. of S. line 950 ft. E. of W. line.	1934	684	890	Onondaga	.....	Grimsby	80	500	16	Fresh water at 55 ft. Sulphur water at 449 ft.
1	7	Arthur Moyer No. 2	1,500 ft. N. of S. line 50 ft. W. of E. line.	1934	677	870	Onondaga	.....	.....	30	420	21	Fresh water at 55 ft. Sulphur water at 435 ft.
1	7	W. C. Patterson P. Bier No. 1	1,400 ft. N. of S. line 850 ft. E. of W. line.	1934	679	850	Onondaga	.....	.....	180	500	22	Fresh water at 60 ft. Sulphur water at 440 ft.
1	7	Broadway Gas Syndicate..... Geo. Bier No. 1	2,200 ft. S. of N. line 1,000 ft. W. of E. line.	1933	679	873	Onondaga	.....	.....	Dry hole.	.....	30	
1	7	W. C. Patterson Geo. Bier No. 2	1,100 ft. S. of N. road 1,300 ft. E. of W. road.	1935	685	870	Onondaga	.....	.....	Dry hole.	.....	18	Fresh water at 33 ft. Sulphur water at 425 ft.
2	7	L. A. Sitter No. 1	310 ft. N. of S. road 1,100 ft. W. of E. line.	1939	679	910	Onondaga	767 793	Clinton... Grimsby	5 8	.....	12	Sulphur water at 465 ft.
2	7	Cyclops Gas Syndicate..... Alvin Sitter No. 1	50 ft. N. of S. line 1,000 ft. E. of W. line.	1933	680	874	Onondaga	759	Clinton...	15	.....	16	Sulphur water at 62 ft.
2	7	W. C. Patterson C. Dougherty No. 1	950 ft. S. of N. road 100 ft. E. of W. line.	1935	686	874	Onondaga	.....	.....	Dry hole.	.....	22	Fresh water at 56 ft. Sulphur water at 420 ft.

Wells in Rainham Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
3	7	W. C. Patterson A. Riddel No. 1	1,500 ft. N. of S. line 50 ft. W. of E. line.	1935	673	867	Onondaga	.....	.....	Dry hole	.....	31	Fresh water at 37 ft. Sulphur water at 430 ft.
3	7	Elgin-Stewart Fred Bier No. 1	280 ft. N. of S. road 50 ft. E. of W. line	1938	673	964	Onondaga	800 839 942	Clinton... Grimsby. Whirlpool	10 40 20	.....	38	Fresh water at 65 ft., rises 40 ft.
4	7	W. C. Patterson G. Roth No. 1	750 ft. N. of S. line 350 ft. W. of E. line.	1935	680	869	Onondaga	.....	.....	36	450	19	Fresh water at 40 ft. Sulphur water at 430 ft.
4	7	W. C. Patterson E. Schier No. 1	750 ft. N. of S. line 250 ft. E. of W. line.	1935	670	867	Onondaga	.....	.....	Dry hole	.....	16	Fresh water at 35 ft. Sulphur water at 425 ft.
7	7	W. C. Patterson W. L. Fess No. 1	400 ft. N. of S. line 50 ft. E. of W. line.	1934	672	915	Onondaga	.....	.....	109	410	4	Fresh water at 43 ft. Black water at 676 ft.
7	7	W. E. Fess No. 2	1,500 ft. N. of S. line 50 ft. E. of W. line.	1934	675	863	Onondaga	.....	.....	Dry hole	.....	24	Black water at 90 ft.
1	8	Otterville Gas Syndicate N. Vanderburg No. 1	2,250 ft. S. of N. line 850 ft. W. of E. line	1933	702	935	Onondaga	748 882	Clinton... Whirlpool	44	350	20	Fresh water at 20 ft. Sulphur water at 305 ft.
1	8	N. Vanderburg No. 2	1,400 ft. S. of N. line 350 ft. E. of W. line	1933	700	901	Onondaga	747 795	Clinton... Grimsby	5	500	14	Fresh water at 14 ft. Sulphur water at 300 ft.
1	8	N. Vanderburg No. 3	1,400 ft. N. of S. line 50 ft. E. of W. line	1933	690	927	Onondaga	739 889	Clinton... Whirlpool	90	480	27	Fresh water at 28 ft. Black water at 310 ft.
1	8	N. Vanderburg No. 4	SW. Corner	1933	683	935	Onondaga	.....	.....	.....	.....	30	Fresh water at 40 ft. Sulphur water at 458 ft.
1	8	Dominion Natural Gas Co. H. Rutherford No. 1	1,000 ft. S. of N. line 700 ft. W. of E. line.	1925	702	871	Onondaga	.....	.....	Dry hole	.....	12	Fresh wtaer at 33 and 45 ft.
2	8	Walter Davis J. Miller No. 1	1,200 ft. S. of N. line 300 ft. W. of E. line.	1932	700	920	Onondaga	.....	.....	15	390	8	Fresh water at 60 ft. Salt water at 475 ft.
2	8	Dominion Natural Gas Co. O. W. Heath No. 1.	NW. Corner	1925	707	864	Onondaga	737 768	Clinton... Grimsby	39	410	6	Fresh water at 30 ft. Sulphur water at 75 ft.
2	8	Holmes No. 1	SW. Corner	.....	682	.....	.....	.....	.....	.....	.....	.....	

2	9	W. C. Patterson..... J. H. Mehlenbacher No. 1.	SW. Corner.....	1925	706	859	Onondaga	.....	.....	Dry hole.	.....	7	Fresh water at 47 ft. Salt water at 490 ft.
2	9	Nelles Corners Gas Syndicate O. Schweyer No. 1.	SE. Corner.....	1925	709	861	Onondaga	741 758	Clinton... Grimsby	240	400	9	Mineral water at 28 ft. Sulphur water at 45 ft.

Wells in Walpole Township, Haldimand County

15	1	Dominion Natural Gas Co.... J. L. Swarts No. 1.	.....	1930	.....	999	Onondaga	.....	.....	Dry hole.	.....	47	Fresh water at 65 ft. Black water at 565 ft.
15	1	Standard Gas and Oil Syndicate. Mary Hammond and Wm. Edsall.	1,175 ft. N. of S. road..... 2,675 ft. W. of E. road.	1939	597	1,006	Onondaga	.....	.....	Dry hole.	.....	42	Sulphur water at 57 and 72 ft., rises 29 ft.
16	1	Standard Gas and Oil Syndicate. Peter Edsall No. 1.	325 ft. N. of S. road..... 1,800 ft. W. of E. road.....	1939	598	1,015	Onondaga	877 913	Clinton... Grimsby	10 9	390	38	Fresh water at 65 ft. Black water at 92 ft.
16	1	Dominion Natural Gas Co.... H. Harrison No. 3.	.....	1909	.....	986	Onondaga	.....	.....	260	455	22	
16	1	Victoria Gas Co., Ltd..... D. Voakes.	40 ft. E. of W. line..... 2,600 ft. S. of N. road.	1937	612	1,009	Onondaga	.....	.....	Dry hole.	.....	24	
18	1	Union Gas Co. No. 192..... C. W. Evans.	1,600 ft. N. of S. road..... 1,000 ft. W. of E. line.	1931	.....	967	Onondaga	865	Grimsby.	8	320	4	Fresh water at 32 ft.
19	1	Dominion Natural Gas Co.... J. Schweyer No. 1.	100 ft. S. of N. road..... 900 ft. E. of W. road.	.....	626	.....	Onondaga	.....	.....	.....	.....	.....	
19	1	Dominion Natural Gas Co.... W. J. Brown No. 1.	.....	1905	630	1,055	Onondaga	.....	.....	500	.....	5	
22	1	Dominion Natural Gas Co....	1,500 ft. N. of lake road... 650 ft. E. of W. line.....	1930	608	964	Onondaga	831 863	Clinton... Grimsby	18	235	.....	
24	1	Dominion Natural Gas Co....	50 ft. N. of lake shore.. 1,250 ft. E. of W. line.	.....	581	932	Onondaga	.....	.....	.....	.....	.....	
24	1	Dominion Natural Gas Co.... Geo. Gamble No. 1.	.....	1906	.....	945	Onondaga	817	Clinton...	.....	.....	6	Show of gas in Clinton.
17	2	Dominion Natural Gas Co.... E. Waldbrook No. 1.	.....	1929	.....	877	Onondaga	.....	.....	Dry hole.	.....	4	Fresh water at 45 ft. Black water at 465 ft.
19	2	Kelly Gas Syndicate..... Emerson Nei No. 1.....	450 ft. N. of S. road..... 200 ft. E. of W. road.....	1936	606	960	Onondaga	830 875	Clinton... Grimsby	25	450	17	Fresh water at 43 ft

Wells in Walpole Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
19	2	Emerson Nei No. 2	1,000 ft. N. of S. road..... 1,100 ft. E. of W. road.....	1936	622	967	Onondaga	837 847 853	Clinton... Grimsby	.....	.....	43	Fresh water at 50 ft.
19	2	Emerson Nei No. 3	2,100 ft. N. of S. road..... 150 ft. W. of E. line.	1936	615	956	Onondaga	.....	.....	Dry hole.	.....	33	Fresh water at 38 ft. Show of gas at 834 ft.
21	2	Kelly Gas Syndicate..... Thos. Sheppard No. 1.....	1,850 ft. N. of S. line..... 675 ft. W. of E. line.....	1931	653	983	Onondaga	876 881	Grimsby. Grimsby	72	390	11	Fresh water at 65 ft. Black water at 540 ft.
21	2	Union Gas Co..... Thos. Sheppard.	SE. Corner.....	1931	646	968	Onondaga	.....	.....	7	300	13	Fresh water at 90 ft.
22	2	Sovereign Gas Co..... B. Hurst No. 1.	SE. Corner.....	1934	642	1,003	Onondaga	868	Clinton...	18	300	8	Sulphur water at 560 ft.
22	2	Dominion Natural Gas Co.... H. Lindsay No. 2.....	1,000 ft. S. of N. road..... 800 ft. W. of E. line.	1929	650	984	Onondaga	848	Clinton...	210	384	10	Fresh water at 60 ft. Black water at 552 ft.
22	2	H. Lindsay No. 1.....	NW. Corner.....	1929	650	971	Onondaga	842 876	Clinton... Grimsby.	120 51	.....	10	Fresh water at 60 ft. Black water at 562 ft.
22	2	Dominion Natural Gas Co.... Wm. H. Waterbury No. 1...	1,700 ft. N. of S. road..... 500 ft. E. of W. line.	1930	651	990	Onondaga	.....	.....	Dry hole.	.....	14	
22	2	Dominion Natural Gas Co....	2,000 ft. N. of S. road..... 200 ft. W. of E. line.	.....	650	985	Onondaga	.....	.....	Dry hole.	.....	5	
23	2	W. B. Lindsay..... A. E. Absolom No. 1	NW. Corner.....	1932	652	976	Onondaga	.....	.....	100	315	15	Black water at 100 ft.
23	2	W. B. Lindsay..... A. E. Absolom No. 2.....	50 ft. S. of N. road..... 1,000 ft. W. of E. line.....	1932	646	973	Onondaga	846 877	Clinton... Grimsby	48	310	11	
23	2	W. B. Lindsay..... A. E. Absolom No. 3.....	2,050 ft. S. of N. road..... 900 ft. E. of W. line.....	1932	646	974	Onondaga	843 880	Clinton... Grimsby	33	315	8	Sulphur water at 70 ft.
24	2	W. B. Lindsay..... A. Lindsay No. 1.....	1,450 ft. S. of N. road..... 900 ft. W. of E. line.	1932	629	963	Onondaga	882	Grimsby.	50	310	12	

24	2	A. Lindsay No. 2		1933		960	Onondaga	839 875	Clinton... Grimsby	15		16		
17	3	Dominion Natural Gas Co.... Wm. Mattice No. 1	1,350 ft. S. of N. road..... 750 ft. W. of E. line.....	1930	648	1,040	Onondaga	880 978	.....	42	273	18	Fresh water at 52 ft. Black water at 528 ft.	
17	3	Dominion Natural Gas Co....	2,400 ft. S. of N. road..... 350 ft. E. of W. line.	1930	643	985	Onondaga	864 888	Clinton..	.....	318	18	Fresh water at 43 ft. Black water at 540 ft.	
18	3	Kelly Gas Syndicate.....	850 ft. N. of S. road..... 650 ft. W. of E. line.	1934	632	966	Onondaga	.....	.....	Dry hole.	.....	27	Fresh water at 57 ft.	
18	3	Kelly Gas Syndicate..... H. M. Atkinson No. 1.....	2,800 ft. N. of S. road..... 900 ft. W. of E. line.....	1934	630	967	Onondaga	821 874	Clinton... Grimsby	34	345	15	Fresh water at 48 ft.	
18	3	Dominion Natural Gas Co.... G. Duxbury No. 1.....	2,200 ft. N. of S. road..... 150 ft. W. of E. line.....	1906	626	987	Onondaga	876 883	Clinton... Grimsby	.....	.....	13		
20	3	Dominion Natural Gas Co.... F. Goodwin No. 1.	.....	1907	.....	977	Onondaga	822 860	Clinton... Grimsby	.....	.....	14		
20	3	Dominion Natural Gas Co.... A. Buckley.....	1,850 ft. N. of S. road.... 750 ft. W. of E. line.....	1930	622	952	Onondaga	823 849	Clinton... Grimsby	490	218	30		
20	3	Dominion Natural Gas Co....	700 ft. S. of N. road..... 600 ft. W. of E. line.....	.....	653	977	Onondaga	822 866	Clinton... Grimsby	.....	.....	14	Show of gas.	
21	3	Dominion Natural Gas Co....	NW. Corner.....	1929	659	967	Onondaga	846 874	Clinton... Grimsby.	127 30	407	10	Fresh water at 53 and 100 ft. Black water at 530 ft.	
21	3	Dominion Natural Gas Co.... A. Buckley No. 1.....	2,300 ft. S. of N. road..... 650 ft. E. of W. line.....	1930	626	1,006	Onondaga	824 941	Clinton.. Grimsby	31	410	26	Fresh water at 30 and 90 ft. Black water at 560 ft.	
21	3	Wm. H. Snider No. 2.....	1,500 ft. N. of S. road..... 100 ft. W. of E. line.....	1929	620	1,007	Onondaga	808 848 942	Clinton... Grimsby. Whirlpool	10 65 46	396	15	Fresh water at 35 ft. Black water at 60 ft.	
22	3	Dominion Natural Gas Co.... J. Weaver No. 1.....	1,500 ft. S. of N. road..... 200 ft. E. of W. line.	1920	620	933	Onondaga	840	Clinton...	18	273	11	Fresh water at 65 ft. Black water at 461 ft.	
22	3	Dominion Natural Gas Co.... J. E. Johnson No. 1.	NE. Corner.....	1907	613	930	Onondaga	785 914	Clinton... Whirlpool	.....	.....	5		
23	3	Dominion Natural Gas Co.... Wm. Rohrbach No. 1.....	650 ft. N. of S. road..... 250 ft. E. of W. line.	1930	649	965	Onondaga	831	Clinton...	221	347	22	Fresh water at 65 ft. Black water at 518 ft.	
23	3	Dominion Natural Gas Co.... Wm. and Chas. Rutherford No. 1.	2,250 ft. S. of N. road..... 50 ft. E. of W. line.	1930	637	949	Onondaga	828	Clinton...	15	300	23	Fresh water at 60 ft. Black water at 510 ft.	
23	3	Dominion Natural Gas Co.... Wm. Atkinson No. 1.....	650 ft. N. of S. road..... 250 ft. W. of E. line.....	1930	646	966	Onondaga	826 860	Clinton... Grimsby	113	408	13	Fresh water at 65 ft. Black water at 510 ft.	

Wells in Walpole Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
23	3	.....	675 ft. S. of N. road..... 600 ft. W. of E. line.	1938	625	.....	Onondaga	.....	.....	.....	.....	.....	
24	3	Rainham Gas and Oil Syndicate. D. Winger.	.....	1930	.....	961	Onondaga	842	Grimsby.	38	420	8	Fresh water at 78 ft.
24	3	Standard Gas and Oil Syndicate. J. Weaver No. 1.	NE. Corner.....	1936	651	957	Onondaga	820	Clinton...	20	450	14	Sulphur water at 33 ft.
24	3	J. Weaver No. 2.....	NW. Corner.....	1936	637	941	Onondaga	805	Clinton...	241	460	28	Sulphur water at 34 ft.
24	3	J. Weaver No. 3.....	900 ft. S. of N. road..... 100 ft. E. of W. line.	1936	633	941	Onondaga	.....	.....	Dry hole.	.....	21	Sulphur water at 35 ft.
24	3	J. Weaver No. 4.....	50 ft. S. of N. road..... 900 ft. E. of W. line.	1936	643	946	Onondaga	812	Clinton...	18	350	8	Sulphur water at 53 ft.
24	3	J. Weaver No. 5.....	1,400 ft. S. of N. road..... 700 ft. W. of E. road.	1927	669	977	Onondaga	859	Grimsby.	30	.....	29	Sulphur water at 52 ft.
24	3	J. Weaver No. 6.....	2,000 ft. S. of N. road..... 300 ft. W. of E. road.....	1937	650	957	Onondaga	811 864	Clinton... Grimsby	29	.....	18	Fresh water at 42 ft.
18	4	Sandusk Gas Co..... G. Duxbury No. 1.....	1,200 ft. N. of S. road..... 1,000 ft. W. of E. road.....	1935	637	922	Onondaga	816 864	Clinton... Grimsby	140	235	0	Black water at 595 ft.
18	4	G. Duxbury No. 2.....	1,800 ft. N. of S. road..... 1,600 ft. W. of E. road.	1935	632	953	Onondaga	.....	.....	Dry hole.	.....	29	Fresh water at 32 ft.
18	4	Standard Gas Syndicate..... G. Duxbury No. 3.....	900 ft. W. of E. road..... 200 ft. N. of S. road.	1936	630	950	Onondaga	.....	.....	Dry hole.	.....	1	Fresh water at 45 ft.
19	4	Dominion Natural Gas Co.... N. Bouckley No. 1.	.....	1907	.....	964	Onondaga	830 857	Clinton... Grimsby	.....	.....	21	Show of gas.
20	4	Dominion Natural Gas Co.... Day No. 1.	.....	1907	.....	979	Onondaga	835 863	Clinton... Grimsby	7	.....	15	

20	4	Kelly Gas Syndicate..... C. Forsythe No. 2.....	1,300 ft. S. of N. road..... 700 ft. E. of W. line.	1936	662	952	Onondaga	844	Clinton...	20	440	10	Fresh water at 60 ft.
20	4	C. Forsythe No. 1.....	750 ft. S. of N. road..... 300 ft. E. of W. line.	1936	660	951	Onondaga	832	Clinton...	103	445	10	Fresh water at 50 ft.
21	4	Dominion Natural Gas Co.... W. Forsythe No. 1.....	100 ft. S. of N. road..... 850 ft. E. of W. line.	1935	659	.....	Onondaga	.....	.....	.....	.....	.....	
21	4	Dominion Natural Gas Co.... W. Forsythe No. 2.....	2,000 ft. S. of N. road..... 50 ft. E. of W. line.....	1929	665	932	Onondaga	805 831	Clinton... Grimsby	84	185	.....	
21	4	Dominion Natural Gas Co.... J. McKune.	.....	1929	.....	923	Onondaga	801 824	Clinton... Grimsby.	15 65	355	15	Fresh water at 60 ft. Black water at 475 ft.
21	4	W. C. Patterson..... E. Mackay No. 1.....	800 ft. N. of S. road..... 900 ft. E. of W. line.	1935	659	966	Onondaga	.....	.....	32	275	10	Fresh water at 80 ft. Black water at 528 ft.
21	4	E. Mackay No. 2.....	800 ft. N. of S. road..... 100 ft. E. of W. line.	1935	661	965	Onondaga	.....	.....	30	275	12	Black water at 90 ft.
22	4	Dominion Natural Gas Co.... J. McKune.	1,150 ft. S. of N. road..... 500 ft. E. of W. line.	1936	635	.....	Onondaga	.....	.....	.....	.....	.....	
22	4	Lymburner Bros. and Webber H. Schweyer No. 2.	1,700 ft. S. of N. road..... 900 ft. W. of E. line.	1936	635	907	Onondaga	806	Grimsby.	36	290	8	Fresh water at 64 and 160 ft.
23	4	Dominion Natural Gas Co.... H. M. and M. P. Justin No. 2.	2,100 ft. N. of S. road..... 800 ft. E. of W. line.	1929	634	955	Onondaga	923	Whirlpool	34	285	19	Fresh water at 35 ft. Black water at 513 ft.
23	4	Dominion Natural Gas Co.... Mrs. C. Stark No. 1.....	2,300 ft. N. of S. road..... 850 ft. E. of W. road.....	1927	.....	898	Onondaga	767 792	Clinton... Grimsby.	5 63	485	13	Fresh water at 40 ft. Black water at 476 ft.
23	4	Dominion Natural Gas Co.... H. Hawke No. 2.....	350 ft. S. of N. road..... 850 ft. W. of E. line.....	1929	.....	945	Onondaga	794 912	Clinton... Whirlpool	47 5	225	15	Fresh water at 45 ft. Black water at 515 ft.
23	4	Lymburner Bros. and Webber. E. J. Justin No. 1.....	900 ft. N. of S. road..... 500 ft. W. of E. line.....	1936	634	926	Onondaga	797 821	Clinton... Grimsby	43	280	27	Fresh water at 73 ft.
23	4	Lymburner Bros. and Webber H. Schweyer No. 3.....	900 ft. S. of N. road..... 1,000 ft. W. of E. line.	1936	635	922	Onondaga	.....	.....	Dry hole.	.....	10	Fresh water at 60 and 80 ft.
23	4	H. Schweyer No. 4.....	1,700 ft. S. of N. road..... 100 ft. E. of W. line.....	1936	633	916	Onondaga	755 832	Clinton... Grimsby	45	330	20	Fresh water at 60 ft.
24	4	Lymburner Bros. and Webber. Chas. Gee No. 1.....	1,800 ft. S. of N. road..... 100 ft. E. of W. line.....	1934	640	956	Onondaga	787 902	Grimsby. Whirlpool	39	275	28	Sulphur water at 80 ft.
24	4	Chas. Gee No. 2.....	1,150 ft. S. of N. road..... 800 ft. W. of E. road.....	1934	655	932	Onondaga	792 844	Clinton... Grimsby	150	458	5	Fresh water at 30 and 60 ft.
24	4	Chas. Gee No. 3.....	1,550 ft. S. of N. road..... 100 ft. W. of E. road.....	1935	660	947	Onondaga	837 900	Clinton... Grimsby	97	405	7	Sulphur water at 644 ft.

Wells in Walpole Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
24	4	Lymburner Bros. and Webber. A. Dennis No. 1	2,000 ft. N. of S. road..... 1,000 ft. W. of E. road.....	1934	.....	994	Onondaga	841 926	Grimsby. Whirlpool	41	450	10	Fresh water at 72 ft.
24	4	A. Dennis No. 2	1,750 ft. N. of S. road..... 50 ft. W. of E. line.....	1935	662	995	Onondaga	900 951	Grimsby. Whirlpool	107	365	7	Fresh water at 60 ft.
24	4	A. Dennis No. 3	1,200 ft. N. of S. road..... 500 ft. E. of W. line.	1936	649	938	Onondaga	817	Clinton...	50	415	5	Fresh water at 43 and 92 ft.
24	4	A. E. Hoover W. Hoover No. 1	900 ft. N. of S. road..... 50 ft. W. of E. road.....	1937	659	991	Onondaga	808 946	Clinton... Whirlpool	40	325	10	Water at 60 ft.
24	4	A. E. Hoover W. Hoover No. 2	1,050 ft. N. of S. road..... 850 ft. W. of E. road.	1937	650	924	Onondaga	.....	.....	Dry hole.	.....	5	Water at 55 ft.
18	5	Elgin Stewart Allen Stewart No. 2	1,600 ft. N. of S. road..... 100 ft. W. of E. road.	1936	662	958	Onondaga	841	Clinton...	160	360	12	Fresh water at 73 ft.
19	5	Dominion Natural Gas Co.... Elgin Stewart	750 ft. N. of S. road..... 100 ft. E. of W. road.	1914	661	.....	Onondaga	.....	.....	.....	.....	.....	
19	.....	Dominion Natural Gas Co.... B. W. Stewart No. 1.	.....	1919	.....	962	Onondaga	825	Clinton...	80	490	15	
19	.....	Broadway Gas Syndicate..... W. McBurney No. 1.	.....	1934	.....	929	Onondaga	803 846	Clinton... Grimsby	77	410	26	Fresh water at 98 ft.
19	5	Kelly Gas Syndicate..... C. Forsythe No. 3	850 ft. N. of S. road..... 250 ft. W. of E. line.	1936	655	938	Onondaga	.....	.....	Dry hole.	.....	10	Show of gas at 853 ft. Fresh water at 60 ft.
20	5	Kelly Gas Syndicate..... G. Schweyer No. 1	2,300 ft. N. of S. road..... 800 ft. W. of E. line.	1935	669	937	Onondaga	850	Grimsby.	18	390	23	Fresh water at 59 ft.
20	5	G. Schweyer No. 2	850 ft. N. of S. road..... 500 ft. W. of E. line.	1935	671	949	Onondaga	853	Grimsby.	63	380	13	Fresh water at 60 ft.
21	5	Kelly Gas Syndicate..... J. Wadsworth No. 1.	.....	1934	.....	914	Onondaga	780	Clinton...	65	415	26	Fresh water at 37 ft.
21	5	Kelly Gas Syndicate..... M. Wilkins No. 2	1,500 ft. S. of N. road..... 150 ft. E. of W. line.	1935	660	915	Onondaga	811	Grimsby.	125	430	12	Fresh water at 59 ft.

21	5	M. Wilkins No. 3	2,150 ft. S. of N. road..... 800 ft. E. of W. line.....	1935	663	924	Onondaga	786 829	Clinton... Grimsby	150	440	16	Fresh water at 75 ft.
21	5	M. Wilkins No. 4	700 ft. S. of N. road..... 300 ft. W. of E. line.	1935	653	915	Onondaga	793	Clinton...	50	460	18	Fresh water at 38 ft.
21	5	M. Wilkins No. 5	1,950 ft. S. of N. road..... 100 ft. W. of E. line.	1935	649	926	Onondaga	810	Clinton...	28	415	21	Fresh water at 83 ft.
21	5	M. Wilkins No. 6	1,000 ft. S. of N. road..... 800 ft. E. of W. line.....	1935	654	907	Onondaga	794 820	Clinton... Grimsby	18	400	13	Fresh water at 22 ft.
21	5	Dominion Natural Gas Co.... Chas. Rew No. 2.....	1,100 ft. N. of S. road..... 600 ft. W. of E. line.....	1928	652	977	Onondaga	795 926	Clinton... Whirlpool	34	375	20	
21	5	Broadway Gas Syndicate..... C. Dougherty.	.....	1934	.....	892	Onondaga	788	Grimsby.	86	405	8	Fresh water at 53 ft.
22	5	Dominion Natural Gas Co.... M. J. Wilkins No. 2.....	1,700 ft. S. of N. road..... 50 ft. E. of W. line.	1928	644	924	Onondaga	.....	.....	Dry hole.	.....	17	Fresh water at 45 and 82 ft. Black water at 478 ft.
22	5	M.J. Wilkins No. 1.....	.....	1928	.....	930	Onondaga	795 834	Clinton... Grimsby	157	468	8	Fresh water at 75 ft. Black water at 475 ft.
22	5	Lymburner Bros. and Webber. H. Schweyer No. 1.....	150 ft. N. of S. road..... 1,000 ft. E. of W. line.	1936	649	.....	Onondaga	.....	.....	Dry hole.	.....	.....	
22	5	H. Schweyer No. 2.....	1,800 ft. N. of S. road..... 700 ft. W. of E. line.	1936	640	.....	Onondaga	.....	.....	.....	.....	.....	
23	5	Dominion Natural Gas Co.... F. P. House No. 1.....	2,000 ft. S. of N. road..... 650 ft. E. of W. line.	1928	659	925	Onondaga	832	Grimsby.	121	460	10	Fresh water at 65 ft. Black water at 470 ft.
23	5	Dominion Natural Gas Co.... E. H. Schweyer No. 1.	.....	1928	.....	923	Onondaga	824	Grimsby.	25	465	20	Fresh water at 45 ft. Black water at 476 ft.
18	5	Stewart and Stewart..... A. Stewart No. 4.....	800 ft. N. of S. road..... 800 ft. W. of E. road.	1937	662	975	Onondaga	.....	.....	Dry hole.	.....	7	Sulphur water at 265 ft. Black water at 735 ft.
20	5	Broadway Gas Syndicate..... T. Maxwell No. 4.....	330 ft. E. of W. line..... 100 ft. S. of N. road.	1937	668	942	Onondaga	850	Grimsby.	30	360	20	Water at 110 ft., rises 50 ft.
23	5	Otterville Gas Syndicate..... F. Booth No. 3.	.....	1934	.....	937	Onondaga	.....	.....	Dry hole.	.....	28	Fresh water at 50 ft. Black water at 400 ft.
24	5	Dominion Natural Gas Co.... A. Schweyer No. 1.....	1,250 ft. S. of N. road..... 350 ft. E. of W. line.	1926	655	923	Onondaga	824	Grimsby.	60	490	19	Black water at 480 ft.
24	5	W. J. Schweyer.....	1,400 ft. S. of N. road..... 100 ft. W. of E. line.....	1926	651	913	Onondaga	790 821	Clinton... Grimsby	332	440	16	Fresh water at 45 ft. Black water at 526 ft.

Wells in Walpole Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
24	5	Standard Gas and Oil Syndicate. A. Brick No. 1	2,250 ft. N. of S. road. 50 ft. W. of E. road.	1933	649	915	Onondaga	801	Grimsby	28	350	29	Sulphur water at 58 ft.
24	5	A. Brick No. 2	2,150 ft. S. of N. road. 1,000 ft. W. of E. road.	1933	649	914	Onondaga	784 832	Clinton... Grimsby	40	330	27	Fresh water at 27 ft.
24	5	Standard Gas and Oil Syndicate. A. Brick No. 3.	1,300 ft. N. of S. road. 1,000 ft. W. of E. road.	1933	644	914	Onondaga	783 803	Clinton... Grimsby	195	465	24	Fresh water at 32 ft.
24	5	A. Brick No. 4	400 ft. N. of S. road. 100 ft. E. of W. line.	1933	644	920	Onondaga	815	Grimsby	45	425	29	Sulphur water at 82 ft.
24	5	A. Brick No. 5	250 ft. N. of S. road. 750 ft. W. of E. road.	1934	645	920	Onondaga	774 832	Clinton... Grimsby	247	460	30	Black water at 62 ft.
24	5	A. Brick No. 6	750 ft. N. of S. road. 50 ft. W. of E. road.	1934	648	914	Onondaga	767 822	Clinton... Grimsby	30	355	31	Sulphur water at 42 ft.
24	5	A. Brick No. 7	1,400 ft. N. of S. road. 200 ft. W. of E. road.	1934	645	919	Onondaga	774 827	Clinton... Grimsby	111	360	26	Sulphur water at 30 ft.
24	5	A. Brick No. 8	50 ft. N. of S. road. 400 ft. E. of W. line.	1934	636	915	Onondaga	770 824	Clinton... Grimsby.	10 30	400	21	
24	5	A. Brick No. 9	2,100 ft. N. of S. road. 300 ft. E. of W. line.	1934	653	919	Onondaga	775 826	Clinton... Grimsby.	10 215	375	18	Black water at 550 ft.
19	6	Walpole Gas Syndicate. Lang No. 3	900 ft. E. of W. road. 1,050 ft. S. of line between N. and S. halves of lot 19.	1937	675	934	Onondaga	.....	.....	Dry hole.	.....	39	Water at 55 ft., rises 30 ft.
19	6	Wm. Lang No. 1	2,200 ft. S. of N. road. 300 ft. E. of W. road.	1934	683	938	Onondaga	836	Grimsby.	25	450	29	Fresh water at 97 ft.
19	6	Walpole Gas Syndicate. Lang No. 2	2,200 ft. S. of N. road. 1,300 ft. E. of W. line.	1936	674	.....	Onondaga	.....	.....	.....	.....	.....	

19	6	Broadway Gas Syndicate..... Bartlett No. 1.....	1,800 ft. S. of N. road..... 100 ft. W. of E. line.....	1935	673	926	Onondaga	801 826	Clinton... Grimsby	178	450	13	Fresh water at 65 ft.
19	6	Bartlett No. 2.....	1,150 ft. S. of N. road..... 1,000 ft. E. of W. road.....	1935	677	925	Onondaga	806 833	Clinton... Grimsby	135	405	25	Fresh water at 60 ft.
19	6	Bartlett No. 3.....	1,200 ft. S. of N. road..... 100 ft. E. of W. road.	1935	681	930	Onondaga	821	Grimsby.	65	410	26	Fresh water at 45 ft.
20	6	Broadway Gas Syndicate..... Chas. Bacher No. 1.....	1,700 ft. S. of N. road..... 700 ft. E. of W. line.	1934	673	925	Onondaga	829	Grimsby.	60	400	19	Fresh water at 70 ft.
20	6	Broadway Gas Syndicate..... Mrs. M. Stewart No. 3.....	1,450 ft. S. of N. road..... 150 ft. W. of E. line.....	1933	667	918	Onondaga	799 831	Clinton... Grimsby	57	420	14	Fresh water at 70 ft.
20	6	Broadway Gas Syndicate.....	500 ft. N. of S. road..... 1,000 ft. W. of E. line.	1934	664	928	Onondaga	832	Grimsby.	65	405	19	Fresh water at 70 ft.
20	6	Broadway Gas Syndicate..... Mrs. M. Stewart No. 2.....	1,500 ft. S. of N. road..... 1,000 ft. W. of E. line.	1933	669	921	Onondaga	.....	.....	62	440	19	Fresh water at 60 ft.
20	6	Broadway Gas Syndicate..... C. Bacher No. 3.....	400 ft. S. of N. road..... 400 ft. E. of W. line.	1935	677	911	Onondaga	811	Grimsby.	40	400	25	Fresh water at 70 ft.
20	6	Broadway Gas Syndicate..... Mrs. M. Stewart No. 1.....	2,200 ft. S. of N. road..... 650 ft. W. of E. line.....	1933	671	913	Onondaga	795 832	Clinton... Grimsby	62	440	37	Fresh water at 62 ft.
20	6	Glengrove Gas Co..... Stewart No. 1.	SW. Corner.....	1933	666	951	Onondaga	794 920	Clinton... Whirlpool	60	340	22	Fresh water at 80 ft. Sulphur water at 200 ft.
21	6	Broadway Gas Syndicate..... C. Dougherty No. 7.....	1,600 ft. E. of W. line..... 2,450 ft. S. of N. road.	1937	665	911	Onondaga	.....	.....	Dry hole.	.....	23	
21	6	C. Dougherty No. 6.....	1,550 ft. E. of W. line..... 1,450 ft. S. of N. road.	1937	670	910	Onondaga	809	Grimsby.	25	400	23	Water at 80 ft., rises 50 ft.
21	6	Dominion Natural Gas Co.... L. Maxwell.	.....	1928	.....	918	Onondaga	.....	.....	Dry hole.	.....	20	Fresh water at 42 ft. Black water at 462 ft.
21	6	Broadway Gas Syndicate..... C. Dougherty No. 4.	.....	1934	.....	895	Onondaga	782	Grimsby.	60	425	12	Fresh water at 50 ft.
21	6	Broadway Gas Syndicate..... C. Dougherty No. 3.	.....	1934	.....	913	Onondaga	.....	.....	Dry hole.	.....	20	Fresh water at 44 ft.
21	6	C. Dougherty No. 2.....	800 ft. S. of N. road..... 10 ft. E. of W. line.....	1933	659	899	Onondaga	776 810	Clinton... Grimsby	325	455	16	
21	6	C. Dougherty No. 1.....	NW. Corner.....	1933	658	895	Onondaga	.....	.....	37	450	11	
22	6	Monarch Gas Syndicate..... P. Wilkins No. 1.....	1,000 ft. N. of S. road..... 800 ft. W. of E. line.	1936	657	911	Onondaga	.....	.....	Dry hole.	.....	27	Fresh water at 55 ft.

Wells in Walpole Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
22	6	P. Wilkins No. 2	1,900 ft. N. of S. road..... 350 ft. W. of E. line.....	1936	662	907	Onondaga	804 816	.....	.....	400	31	Fresh water at 99 ft.
22	6	Dominion Natural Gas Co....	NE. Corner.....	1928	660	907	Onondaga	.....	.....	Dry hole.	.....	17	Fresh water at 60 ft. Black water at 450 ft.
22	6	Dominion Natural Gas Co.... M. J. Wilkins No. 1.	SE. Corner.....	1925	662	923	Onondaga	802 838	Clinton... Grimsby	43	420	16	
23	6	Dominion Natural Gas Co.... M. House No. 1.....	50 ft. N. of S. road..... 1,000 ft. W. of E. line.....	1925	661	920	Onondaga	785 819	Clinton... Grimsby.	5 73	455	17	
23	6	Dominion Natural Gas Co.... I. Wilkins.....	1,150 ft. N. of S. road..... 1,000 ft. W. of E. line.	1927	657	902	Onondaga	.....	.....	Dry hole.	.....	4	Fresh water at 20 ft. Black water at 470 ft.
23	6	Monarch Gas Syndicate.....	1,200 ft. S. of N. road..... 50 ft. E. of W. line.....	1934	648	894	Onondaga	762 810	Clinton... Grimsby	130	415	12	Fresh water at 57 ft.
23	6	Monarch Gas Syndicate..... F. P. House No. 2.....	2,000 ft. S. of N. road..... 100 ft. E. of W. line.....	1934	654	897	Onondaga	773 814	Clinton... Grimsby	69	407	.....	Fresh water at 610 ft.
23	6	F. P. House No. 3.....	2,200 ft. S. of N. road..... 900 ft. E. of W. line.	1934	649	898	Onondaga	.....	.....	Dry hole.	.....	19	Fresh water at 56 ft.
23	6	F. P. House No. 4.....	2,100 ft. N. of S. road..... 1,000 ft. W. of E. line.	1935	648	892	Onondaga	807	Clinton...	70	435	9	Fresh water at 18 ft.
23	6	F. P. House No. 5.....	1,500 ft. N. of S. road..... 100 ft. E. of W. line.	1935	662	912	Onondaga	793	Clinton...	500	485	24	Water at 575 ft.
24	6	C. W. Feathertsone..... Ed. Bacher No. 1.	NE. Corner.....	1923	662	888	Onondaga	775 803	Clinton... Grimsby	70	450	14	
24	6	Standard Gas and Oil Syndicate. G. Wiederick No. 2.	1,100 ft. S. of N. road..... 600 ft. W. of E. line.	1933	655	893	Onondaga	.....	.....	Dry hole.	.....	7	Fresh water at 39 ft. Sulphur water at 115 ft.
24	6	G. Wiederick No. 3.....	1,300 ft. S. of N. road..... 900 ft. E. of W. line.....	1933	660	894	Onondaga	759 818	Clinton... Grimsby	28	375	16	Fresh water at 38 ft. Sulphur water at 115 ft.

24	6	G. Wiederick No. 1	1,900 ft. S. of N. road..... 700 ft. W. of E. road.	1932	653	890	Onondaga	.....	.....	75	395	8	Fresh water at 30 ft.
24	6	Dominion Natural Gas Co.... I. Wilkins No. 1.	SW. Corner.....	1926	650	910	Onondaga	.....	.....	221	445	12	Fresh water at 50 ft. Black water at 570 ft.
24	6	Dominion Natural Gas Co.... G. Wiederick.	1,000 ft. N. of S. road..... 400 ft. W. of E. line.....	1926	658	900	Onondaga	789 823	Clinton... Grimsby	82	445	14	Fresh water at 30 ft. Black water at 510 ft.
20	7	Dominion Natural Gas Co.... H. D. Keen No. 2.....	1,300 ft. N. of S. road..... 750 ft. W. of E. line.	1922	663	904	Onondaga	.....	.....	Dry hole.	.....	0	
20	7	C. W. Featherstone.....	2,150 ft. S. of N. road..... 300 ft. W. of E. line.....	1923	674	915	Onondaga	771 830	Clinton... Grimsby	350	500	15	
20	7	C. W. Featherstone.....	1,700 ft. S. of N. road..... 900 ft. E. of W. line.....	1923	668	898	Onondaga	784 795	Clinton... Whirlpool	213	500	8	
21	7	Dominion Natural Gas Co.... H. D. Keen No. 1.....	2,000 ft. N. of S. road..... 1,000 ft. W. of E. line.....	1922	684	905	Onondaga	778 811	Clinton... Grimsby	38	480	18	
21	7	Dominion Natural Gas Co.... H. Campbell No. 1.	SE. Corner.....	1922	696	904	Onondaga	794 804	Clinton... Grimsby	25	480	8	
21	7	Union Gas Co. No. 190..... L. Keen.....	1,000 ft. S. of N. road..... 50 ft. E. of W. line.	1931	684	906	Onondaga	.....	.....	141	425	18	Sulphur water at 60 ft.
21	7	Dominion Natural Gas Co.... Fred. Held No. 1.....	750 ft. S. of N. road..... 800 ft. W. of E. line.	1928	668	909	Onondaga	.....	.....	.....	.....	10	Fresh water at 20 and 60 ft. Black water at 460 ft.
22	7	Dominion Natural Gas Co.... J. O'Donnell No. 1.....	2,500 ft. S. of N. road..... 200 ft. E of W. line.	1922	675	912	Onondaga	805	Grimsby.	497	500	18	Fresh water at 90 ft.
22	7	Union Gas Co..... O. Ebert.	.....	1931	.....	914	Onondaga	857	.....	5	.....	22	Sulphur water at 90 ft.
22	7	Dominion Natural Gas Co.... O. Ebert No. 1.....	50 ft. S. of N. road..... 650 ft. E. of W. line.	1930	697	908	Onondaga	.....	.....	Dry hole.	.....	15	Fresh water at 80 ft. Black water at 500 ft.
23	7	Union Gas Co. No. 204..... W. Bacher.....	400 ft. N. of S. road..... 400 ft. E. of W. line.	1931	658	905	Onondaga	.....	.....	90	225	11	Fresh water at 42 ft.
23	7	Dominion Natural Gas Co.... J. A. Best No. 2.....	SE. Corner.....	1923	661	904	Onondaga	786 811	Clinton... Grimsby.	174 10	480	18	
23	7	Dominion Natural Gas Co.... W. Bacher No. 1.	.....	1923	.....	907	Onondaga	783 803	Clinton... Grimsby.	21 21	480	18	
23	7	Dominion Natural Gas Co.... J. A. Best No. 1.....	1,500 ft. N. of S. road..... 100 ft. W. of E. line.	1923	671	904	Onondaga	.....	.....	Dry hole.	.....	10	
24	7	Otterville Natural Gas..... H. Williamson No. 1.....	2,300 ft. N. of S. road..... 1,150 ft. W. of E. line.....	1934	676	901	Onondaga	375 763 805	Salina.... Clinton Grimsby	9	375	15	Fresh water at 60 ft. Black water at 580 ft

Wells in Walpole Township, Haldimand County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
24	7	Wm. Williamson No. 2	2,300 ft. N. of S. road..... 50 ft. W. of E. line.....	1934	682	933	Onondaga	762 895	Clinton... Grimsby	125	430	16	Fresh water at 78 ft. Black wtaer at 500 ft.
24	7	Wm. Williamson No. 3	2,650 ft. N. of S. road..... 50 ft. E. of W. line.	1934	678	898	Onondaga	.....	.....	Dry hole.	.....	12	Fresh water at 70 ft. Black water at 350 ft.
24	7	H. Williamson No. 4	3,500 ft. N. of S. road..... 50 ft. W. of E. road.	1934	678	932	Onondaga	775	Grimsby.	75	400	13	Fresh water at 55 ft. Black water at 460 ft.
24	7	Dominion Natural Gas Co.... Roth No. 1	50 ft. N. of S. road..... 850 ft. W. of E. line.	1923	669	906	Onondaga	784	Clinton...	370	500	19	
21	8	L. Keen	275 ft. E. of W. line..... 860 ft. N. of S. road.	1938	693	.....	Onondaga	.....	.....	.....	.....	.....	Drilling Sept. 23, 1938.
22	8	Dominion Natural Gas Co.... J. Hyland No. 2	700 ft. N. of S. road..... 100 ft. W. of E. line.	1930	703	957	Onondaga	894	Whirlpool	41	423	18	Fresh water at 50 ft. Black water at 490 ft.
22	8	Dominion Natural Gas Co....	50 ft. S. of N. road..... 1,000 ft. W. of E. line.	1930	694	908	Onondaga	.....	.....	Dry hole.	.....	11	Fresh water at 60 ft. Black water at 468 ft.
22	8	Dominion Natural Gas Co.... J. Hyland No. 1	1,200 ft. N. of S. road..... 650 ft. E. of W. line.	1928	697	887	Onondaga	.....	.....	Dry hole.	.....	13	Fresh water at 40 ft. Black water at 455 ft.
23	8	Dominion Natural Gas Co.... J. H. Vanderburg No. 1.....	50 ft. N. of S. road..... 600 ft. W. of E. line.	1930	701	906	Onondaga	.....	.....	Dry hole.	.....	25	Fresh water at 50 ft. Black water at 510 ft.
23	8	Dominion Natural Gas Co.... Thos. Murray No. 1.	NE. Corner.....	1927	701	887	Onondaga	768 790	Clinton... Grimsby	55	440	14	Fresh water at 40 ft. Black water at 468 ft.
24	8	Otterville Natural Gas..... D. Campbell No. 1.....	1,950 ft. N. of S. road..... 900 ft. E. of W. line.	1933	706	893	Onondaga	750	Clinton...	.....	.....	13	Show of gas. Fresh water at 35 ft.
21	9	Dominion Natural Gas Co....	.....	1928	.....	880	Onondaga	754	Clinton...	25	432		
21	9	Dominion Natural Gas Co.... J. Stadder No. 1.	.....	1928	.....	881	Onondaga	746	Clinton...	49	452	2	Fresh water at 20 ft. Black water at 435 ft.
22	9	Dominion Natural Gas Co.... J. Rowntree No. 1.	.....	1927	.....	877	Onondaga	766	Grimsby.	88	428	40	Fresh water at 50 ft. Black water at 453 ft.

22	9	Dominion Natural Gas Co....	1,100 ft. S. of N. road..... 200 ft. W. of E. line.	1928	689	888	Onondaga	.....	.....	Dry hole.	.....	20	Fresh water at 40 ft. Black water at 453 ft.
23	9	Dominion Natural Gas Co.... Mrs. C. Stark No. 2.	.....	1928	.....	871	Onondaga	.....	.....	Dry hole.	.....	13	Fresh water at 21 ft. Black water at 454 ft.
23	9	.....	NW. Corner.....	1937	697	875	Onondaga	.....	.....	Dry hole.	.....	.....	
22	10	Mohawk Gas and Oil Syndicate. A. Lishman No. 1.	.....	1934	.....	868	Onondaga	.....	.....	20	385	2	
22	10	Mohawk Gas and Oil Syndicate. J. W. Munroe.	.....	1934	.....	869	Onondaga	.....	.....	Dry hole.	.....	5	
23	10	Mohawk Gas and Oil Syndicate. A. Lishman No. 2.	.....	1934	.....	851	Onondaga	720 751	Clinton... Grimsby.	15 8	.....	4	Fresh water at 22 ft.

Wells in Bertie Township, Welland County

8	5 N.R.	W. A. Hulse..... W. A. Bowman No. 1.....	400 ft. N. of S. line..... 700 ft. E. of W. road.....	1936	611	846	Salina....	720 760	Grimsby.	3	.....	6	
14	7 N.R.	Star Gas Syndicate..... F. Lichtenberger No. 1.....	475 ft. E. of W. road..... 1,675 ft. N. of S. road.....	1939	574	729	Salina....	590 620	Clinton... Grimsby.	4 35	150	27	Fresh water at 40 ft.
14	7 N.R.	Star Gas Syndicate..... Elda Miller Estate No. 1...	900 ft. S. of N. road..... 1,950 ft. E. of W. road.....	1939	575	719	Salina....	582 605	Clinton... Grimsby.	2 68	290	60	Fresh water at 65 ft. Sulphur water at 240 ft.
15	7 N.R.	Star Gas Syndicate..... Sam Burger No. 1.....	1,900 ft. E. of W. road..... 80 ft. N. of S. road.....	1939	572	704	Salina....	585 620	Clinton... Grimsby.	3 120	290	51	Fresh water at 58 ft. Black water at 355 ft.
16	8 N.R.	Welland County Gas Syndicate J. Morningstar No. 1.	NW. Corner.....	1935	570	708	Salina....	.....	.....	Dry hole.	.....	16	
1	10 N.R.	Haldimand Gas Syndicate.... G. Teal No. 1.....	400 ft. S. of N. line..... 800 ft. E. of W. line.....	1931	652	840	Onondaga	691 754	Clinton... Grimsby	41	205	6	Fresh water at 75 ft.
1	10 N.R.	G. Teal No. 6.....	50 ft. N. of S. road..... 1,400 ft. E. of W. line.	1931	638	833	Onondaga	827	Whirlpool	3	140	12	
1	10 N.R.	G. Teal No. 7.....	500 ft. N. of S. road..... 1,600 ft. E. of W. line.....	1931	643	841	Onondaga	705 741	Clinton... Grimsby	11	155	25	Fresh water at 30 and 65 ft.
2	10 N.R.	Haldimand Gas Syndicate.... C. M. Teal No. 4.....	450 ft. N. of S. line..... 300 ft. E. of W. line.....	1931	644	889	Onondaga	681 806	Clinton... Whirlpool	83	85	2	
2	10 N.R.	Haldimand Gas Syndicate.... Morley Athoe No. 5.....	50 ft. S. of N. road..... 650 ft. E. of W. line.....	1931	653	888	Onondaga	701 809	Clinton... Whirlpool	65	135	12	Fresh water at 74 ft.

Wells in Bertie Township, Welland County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
3	10 N.R.	Haldimand Gas Syndicate....	200 ft. N. of S. road.....	1931	657	924	Onondaga	797\	Grimsby.	20	90	9	Fresh water at 70 ft.
		S. Johnston No. 2.....	1,800 ft. W. of E. road.....	.....	.....	.....	.....	804/		40			
								834	Whirlpool	20			
3	10 N.R.	S. Johnston No. 8.....	50 ft. N. of S. road.....	1931	641	850	Onondaga	719	Clinton...	3	155	4	Sulphur water at 95 ft.
			1,100 ft. W. of E. road.....	.....	.....	.....	.....	774	Grimsby.	9			
4	10 N.R.	Haldimand Gas Syndicate....	400 ft. S. of N. line.....	1931	636	845	Onondaga	765	Grimsby.	3	.....	2	Abandoned.
		John Gruber No. 3.....	1,200 ft. W. of E. line.										
16	10 N.R.	Welland County Gas Syndicate	25 ft. N. of S. line.....	1930	577	738	Salina....	585	Grimsby.	30	140	29	Fresh water at 32 ft.
		E. House No. 3.....	1,200 ft. E. of W. road....	.....	.....	.....	.....	698	Whirlpool				
2	11 N.R.	Royal Gas Syndicate.....	325 ft. N. of S. road.....	1939	607	834	Salina....	648	Clinton...	4	65	30	Fresh water at 30 ft.
		John Lichtenberger No. 1...	2,800 ft. E. of W. line.....	.....	.....	.....	.....	795	Whirlpool	4			
2	11 N.R.	John Lichtenberger No. 2...	700 ft. S. of N. road.....	1939	592	802	Salina....	.....	.....	.....	.....	60	Fresh water at 80 ft., flowing well.
			1,725 ft. E. of W. line.										
2	11 N.R.	John Lichtenberger No. 3...	925 ft. S. of N. road.....	1939	582	847	Salina....	717	Grimsby.	35	195	123	Fresh water at 126 ft.
			475 ft. E. of W. line.....	.....	.....	.....	.....	796	Whirlpool	30			Sulphur water at 200 ft.
3	11 N.R.	Haldimand Gas Syndicate....	200 ft. S. of N. line.....	1933	584	830	Salina....	670	Grimsby.	125	125	118	Fresh water at 109 ft.
		R. Winger No. 9.....	700 ft. E. of W. road.....	.....	.....	.....	.....	747	Whirlpool				Sulphur water at 215 ft.
3	11 N.R.	R. Winger No. 10.....	850 ft. N. of S. road.....	1933	580	832	Salina....	684	Grimsby.	25	115	135	Fresh water at 155 ft.
			1,700 ft. E. of W. road.....	.....	.....	.....	.....	746	Whirlpool				
4	11 N.R.	Haldimand Gas Syndicate....	1,000 ft. E. of W. road.....	1925	578	822	Salina....	712	Grimsby.	4	75	106	Fresh water at 35 ft.
		W. Reinhart No. 1.....	550 ft. N. of S. line.....	.....	.....	.....	.....	760	Whirlpool	4			
13	11 N.R.	Welland County Gas Syndicate	600 ft. N. of S. line.....	1930	582	737	Salina....	556	Clinton...	16	85	25	Fresh water at 33 ft.
		C. and W. House No. 4.....	300 ft. W. of E. road.....	.....	.....	.....	.....	694	Whirlpool				
15	11 N.R.	Welland County Gas Syndicate	400 ft. N. of S. road.....	1934	589	765	Salina....	545	Clinton...	32	165	22	Fresh water at 50 ft.
		E. and R. Winger No. 16....	1,300 ft. E. of W. road.....	.....	.....	.....	.....	689	Whirlpool				
15	11 N.R.	E. and R. Winger No. 17....	500 ft. N. of S. line.....	1934	584	758	Salina....	563	Clinton...	19	80	22	Fresh water at 60 ft.
			500 ft. W. of E. road.....	.....	.....	.....	.....	687	Whirlpool				

16	11 N.R.	Welland County Gas Syndicate F. Schier No. 1	100 ft. N. of S. line..... 1,000 ft. E. of W. road.....	1930	583	732	Salina....	540 678	Clinton... Whirlpool	23	55	26	Fresh water at 38 ft.
16	11 N.R.	Welland County Gas Syndicate E. House No. 2	200 ft. N. of S. line..... 600 ft. W. of E. road.....	1930	581	750	Salina....	550 694	Clinton... Whirlpool	40	85	28	Fresh water at 47 ft.
B	11 N.R.	E. J. Hawkins No. 1	130 ft. W. of E. road..... 125 ft. N. of S. road.	1938	573	698	Salina....	599	Grimsby.	3	.....	37	Fresh water at 37 ft.
7	12 N.R.	F. and H. Roth H. Pirson	635 ft. E. of W. road..... 1,375 ft. S. of N. road.....	1938	589	817	Salina....	684 774	Grimsby. Whirlpool	4 6	.....	50	
9	12 N.R.	F. and H. Roth K. F. Sullivan	680 ft. E. of W. road..... 1,500 ft. N. of S. road.	1938	588	746	Salina....	.....	.....	9	200	44	Fresh water at 44 ft.
9	12 N.R.	Roth Bros. Johnson No. 1	750 ft. N. of S. road..... 800 ft. E. of W. line.....	1937	586	753	Salina....	612 728	Clinton... Whirlpool	1	175	40	Black water at 85 and 110 ft.
9	12 N.R.	Johnson No. 2	100 ft. N. of S. road..... 1,800 ft. W. of E. road.....	1937	585	769	Salina....	594 717	Clinton... Whirlpool	12	160	40	Fresh water at 33 ft. Black water at 70 ft.
10	12 N.R.	Johnson No. 3	550 ft. N. of S. road..... 1,700 ft. W. of E. road.....	1937	584	719	Salina....	582 628	Clinton... Grimsby	5	130	37	Fresh water at 25 ft. Black water at 65 ft.
15	12 N.R.	Welland County Gas Syndicate C. and W. House No. 9	700 ft. N. of S. road..... 700 ft. W. of E. road.....	1933	594	750	Salina....	551 695	Clinton... Whirlpool	30	80	18	Fresh water at 24 ft., rises 10 ft.
15	12 N.R.	Welland County Gas Syndicate C. and W. House No. 1	700 ft. N. of S. road..... 50 ft. E. of W. road.....	1936	594	765	Salina....	546 690	Clinton... Whirlpool	20	70	18	Fresh water at 24 ft.
16	12 N.R.	Bertie Gas Syndicate..... F. Schier No. 5	50 ft. S. of N. road..... 1,000 ft. E. of W. road.....	1933	586	738	Salina....	538 683	Clinton... Whirlpool	23	80	45	Fresh water at 50 and 180 ft.
16	12 N.R.	F. Schier No. 6	100 ft. S. of N. road..... 1,000 ft. W. of E. road.....	1933	587	733	Salina....	538 675	Clinton... Whirlpool	25	65	38	Fresh water at 40 and 76 ft. Sulphur water at 306 ft.
16	12 N.R.	F. Schier No. 7	25 ft. N. of S. line..... 1,300 ft. E. of W. road.....	1930	590	733	Salina....	541 687	Clinton... Whirlpool	35	120	38	Fresh water at 61 ft.
8	12 N.R.	F. and H. Roth H. Dixon No. 1	705 ft. E. of W. road..... 345 ft. S. of N. road.	1938	588	671	Salina....	661	Grimsby.	320	320	45	Fresh water at 45 ft., rises 23 ft.
8	12 N.R.	F. and H. Roth Mrs. A. Johnston No. 1	380 ft. S. of N. road..... 2,320 ft. E. of W. road.	1938	584	744	Salina....	628	Grimsby.	12	.....	45	Fresh water at 46 ft. Black water at 108 ft.
7	13 N.R.	Sherk and Nagel Bert Sherk No. 1	18 ft. E. of W. road..... 1,850 ft. S. of N. road.....	1939	592	792	Salina....	635 699	Clinton... Grimsby.	8 50	250	67	Fresh water at 67 ft., rises 62 ft.
8	13 N.R.	F. and H. Roth J. Barnhardt No. 1	810 ft. S. of N. road..... 380 ft. W. of E. road.	1938	590	772	Salina....	.....	.....	.....	.....	62	Fresh water at 62 ft., small quantity of gas.
11	13 N.R.	House and Harris F. Winger No. 1	150 ft. S. of N. line..... 1,400 ft. E. of W. road.....	1932	583	725	Salina....	570 641	Clinton... Whirlpool	26	145	43	Fresh water at 45 ft. Sulphur water at 80 ft.

Wells in Bertie Township, Welland County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
11	13 N.R.	F. Winger No. 2	300 ft. S. of N. line 50 ft. E. of W. road	1932	584	801	Salina	590 717	Clinton Whirlpool	60	125	45	Fresh water at 50 and 85 ft.
11	13 N.R.	C. C. House R. Hill No. 3	700 ft. N. of S. road 1,500 ft. W. of E. road	1936	585	733	Salina	571 630	Clinton Grimsby	5 5	75	48	Fresh water at 50 ft., rises 35 ft.
12	13 N.R.	C. C. House Chas. Haun No. 14	50 ft. S. of N. road 600 ft. W. of E. road	1934	583	722	Salina	597 642	Clinton Grimsby	19	60	45	Fresh water at 48 ft.
12	13 N.R.	Chas. Haun No. 15	700 ft. S. of N. road 1,500 ft. W. of E. road	1934	584	790	Salina	572 707	Clinton Whirlpool	9	60	48	Fresh water at 50 ft.
13	13 N.R.	Welland County Gas Syndicate J. Ruch No. 5	550 ft. N. of S. road 1,600 ft. W. of E. road	1930	579	755	Salina	553 707	Clinton Whirlpool	20 15	85	47	Fresh water at 69 ft.
14	13 N.R.	Welland County Gas Syndicate Geo. Kiemele No. 8	100 ft. N. of S. line 400 ft. E. of W. road	1932	580	720	Salina	558 602	Clinton Grimsby	4	95	50	Fresh water at 45 ft. Sulphur water at 85 ft.
15	13 N.R.	Welland County Gas Syndicate S. Barnhart No. 6	300 ft. N. of S. road 1,700 ft. E. of W. road	1930	584	693	Salina	550 590	Clinton Grimsby	15 8	80	55	Fresh water at 58 ft.
5	14 N.R.	Provincial Natural Gas Co. J. Bittner.		1937		780	Salina			Dry hole.		58	Fresh water at 51 ft. Black water at 510 ft.
5	14 N.R.	J. Bittner	93 ft. W. of E. road 130 ft. S. of N. line.	1937	590	780	Salina			Dry hole.		58	Fresh water at 58 ft. Black water at 510 ft.
8	14 N.R.	Coronation Gas Syndicate S. Eby No. 1	500 ft. S. of N. line 480 ft. E. of W. road	1937	583	820	Salina	659 744	Grimsby Whirlpool	12	250	56	Fresh water at 40 ft.
8	14 N.R.	S. Eby No. 2	500 ft. E. of W. road 600 ft. N. of S. road	1938	586	844	Salina	679 749	Grimsby Whirlpool	9 14	250	58	Fresh water at 80 ft.
11	14 N.R.	House and Hains F. Winger No. 3	350 ft. S. of N. line 1,200 ft. W. of E. road	1932	587	738	Salina	604 663	Clinton Grimsby	12	110	54	Fresh water at 54 ft., rose 27 ft.
3	15 N.R.	Provincial Natural Gas Co. E. Herring	600 ft. N. of S. road 50 ft. W. of E. road.	1922	623	825	Salina			Dry hole.			
6	15 N.R.	Coronation Gas Syndicate H. J. Fretz No. 1	1,500 ft. E. of W. road 100 ft. S. of N. road	1937	593	830	Salina	699 771	Grimsby Whirlpool	2	165	42	Fresh water at 30 ft.

6	15 N.R.	Coronation Gas Syndicate.... B. Sherk No. 1.....	100 ft. S. of N. road..... 1,500 ft. E. of W. road.	1937	593	782	Bertie-Akron	.....	.....	Dry hole.	.....	54	Fresh water at 54 ft. Sulphur water at 90 ft.
22	B.F.	Bertie Gas Company..... H. Clause No. 2.....	150 ft. S. of N. road..... 450 ft. W. of E. line.	1931	607	990	Onondaga	.....	.....	5	400	31	
22	B.F.	H. Clause No. 3.....	1,250 ft. S. of N. road..... 500 ft. W. of E. line.	1931	606	926	Onondaga	.....	.....	14	450	32	
31	B.F.	Provincial Natural Gas Co.... A. Holloway No. 490.....	10,000 ft. S. of highway... 700 ft. E. of W. line.	1923	582	964	Onondaga	.....	.....	Dry hole.	.....	60	
33	B.F.	Provincial Natural Gas Co.... R. Jackson.....	1,400 ft. S. of N. road..... 100 ft. E. of W. road.	1919	589	3,410	Onondaga	.....	.....	Dry hole.	.....	.....	
26	1 L.E.	Provincial Natural Gas Co.... N. Ellsworth.....	100 ft. S. of C.N. Rys... 250 ft. E. of W. line.	1923	604	896	Onondaga	820	Whirlpool	40	275	43	
26	1 L.E.	Provincial Natural Gas Co.... B. Beam.....	1,050 ft. S. of C.N. Rys... 600 ft. E. of W. line.	1926	606	887	Onondaga	.....	.....	40	375	.....	
29	1 L.E.	Provincial Natural Gas Co.... A. Sherk No. 493.....	1,700 ft. N. of S. road..... 50 ft. W. of E. line.	1923	625	933	Onondaga	865	Whirlpool	130	330	15	
33	1 L.E.	Bertie Gas Co..... W. Smith No. 4.....	150 ft. S. of N. road..... 700 ft. E. of W. line.	1931	611	884	Onondaga	.....	.....	Dry hole.	.....	18	
3	3 L.E.	Provincial Natural Gas Co.... C. Baxter.	SW. Corner.....	1923	593	3,470	Onondaga	.....	.....	Dry hole.	.....	50	Salt water at 34 and 55 ft.
22	3 L.E.	Bertie Gas Co..... Mrs. Baxter No. 1.....	1,600 ft. S. of No. 3 highway 350 ft. W. of E. line.	1931	628	850	Onondaga	.....	.....	Dry hole.	.....	2	
34	3 L.E.	Coronation Gas Co..... L. Winger No. 1.	NE. Corner.....	1937	617	915	Onondaga	.....	.....	Dry hole.	.....	6	Fresh water at 35 ft., rises 20 ft.
34	3 L.E.	Coronation Gas Co..... D. T. Zavitz.....	142 ft. S. of N. road..... 250 ft. W. of E. road.....	1937	615	900	Onondaga	732 831	Grimsby. Whirlpool	26	75	10	Fresh water at 24 ft.

Wells in Crowland Township, Welland County

4	B.F.	Provincial Natural Gas Co.... J. Biggar.	NW. Corner.....	.....	580	483	Salina....	.....	.....	8	200	.....	
5	B.F.	Provincial Natural Gas Co.... D. Christofore.....	1,700 ft. N. of S. road..... 150 ft. W. of E. road.	1926	574	500	Salina....	.....	.....	8	200	.....	
18	B.F.	Hoditch.....	NE. Corner.....	1908	568	540	Salina....	340	Clinton...	.....	.....	.....	

Wells in Crowland Township, Welland County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
4	4	Industrial Gas Company..... W. Lundy No. 1.	SW. Corner.....	1907	588	655	Salina....	492 532	Clinton... Whirlpool	.....	100	80	
4	4	W. Lundy No. 2.....	1,100 ft. S. of N. road..... 100 ft. E. of W. road.	1911	569	585	Salina....	.....	.....	.....	.....	60	
5	4	Industrial Natural Gas Co.... F. Silverthorne.....	500 ft. S. of N. road..... 700 ft. W. of E. road.....	1907	581	623	Salina....	459 566	Clinton... Whirlpool	450	.....	.....	
6	4	Wm. Vanalstein.....	SW. Corner.....	1911	594	633	Salina....	.....	.....	.....	.....	.....	
16	4	W. C. Patterson..... J. Carl No. 1.....	1,550 ft. N. of S. road..... 100 ft. E. of W. road.	.....	614	621	Salina....	.....	.....	Dry hole.	.....	123	
4	5	Industrial Natural Gas Co.... M. Buchner.....	1,200 ft. N. of S. road..... 50 ft. W. of E. line.	1919	585	655	Salina....	500	Clinton...	20	75	88	Abandoned.
5	5	Jackson and Graff Syndicate.. H. Dunn No. 1.....	1,300 ft. S. of N. road..... 1,125 ft. W. of E. road.....	1937	590	637	Salina....	470 528	Clinton... Grimsby	6	150	82	Fresh water at 60 and 87 ft.
5	5	E. McCombs No. 1.....	940 ft. S. of N. road..... 335 ft. W. of E. road.	1937	590	647	Salina....	500	Grimsby.	23	195	93	Fresh water at 98 ft. Black water at 167 ft.
15	5	W. C. Patterson..... Horton No. 1.....	700 ft. S. of N. road..... 600 ft. W. of E. road.	1929	600	626	Salina....	.....	.....	Dry hole.	.....	117	
1	6	Industrial Natural Gas Co.... David Miller.....	100 ft. N. of S. road..... 400 ft. W. of E. road.	1927	584	750	Salina....	.....	.....	46	205	84	
2	6	Industrial Natural Gas Co.... J. Snider.....	100 ft. N. of S. road..... 700 ft. W. of E. line.....	1927	591	726	Salina....	552 650	Clinton... Whirlpool	100	230	76	
5	6	Industrial Natural Gas Co.... A. Currant.....	1,350 ft. S. of N. road..... 50 ft. W. of E. road.	1919	595	706	Salina....	.....	.....	24	50	90	
1	7	Industrial Natural Gas Co.... W. Miller No. 56.	SW. Corner.....	1919	586	715	Salina....	667	Whirlpool	25	150	83	
1	7	W. Miller No. 57.....	2,300 ft. S. of N. road..... 100 ft. E. of W. line.....	1919	598	728	Salina....	564 683	Grimsby. Whirlpool	60	.....	67	

1	7	W. Miller No. 58	1,500 ft. N. of S. road..... 100 ft. E. of W. line.....	1919	586	719	Salina....	....	Grimsby. Whirlpool	149	275	77	
3	7	Industrial Natural Gas Co.... J. Orr No. 67.....	800 ft. N. of S. road..... 100 ft. W. of E. road.	1921	597	737	Salina....	.....	.....	.....	.....	86	Fresh water at 90 and 200ft.
6	7	J. Orr No. 71.....	2,200 ft. S. of N. road..... 100 ft. W. of E. line.....	1923	601	692	Salina....	....	Clinton... Whirlpool	15 20	.....	86	
9	7	Industrial Natural Gas Co.... J. Henderson No. 81.....	100 ft. S. of N. road..... 600 ft. W. of E. road.....	1930	612	715	Salina....	545 684	Clinton... Whirlpool	14	30	127	
18	7	Industrial Natural Gas Co.... Ed. Farr No. 80.....	100 ft. S. of N. road..... 350 ft. W. of E. line.	1929	589	683	Salina....	.....	.....	Dry hole.	.....	108	

Wells in Willoughby Township, Welland County

14	1 Cross	W. C. Patterson..... Beam No. 1.....	2,700 ft. S. of N. road..... 100 ft. W. of E. road.	1934	587	715	Salina....	.....	.....	20	285	50	Fresh water at 90 ft. Sulphur water at 320 ft.
15	1 Cross	W. C. Patterson..... Reece No. 1.....	2,200 ft. S. of N. road..... 1,000 ft. E. of W. road.	1934	587	660	Salina....	.....	.....	Dry hole.	.....	52	Fresh water at 92 ft. Sulphur water at 310 ft.
2	3	Mrs. Ebling.....	800 ft. N. of S. line..... 50 ft. E. of W. road.....	.....	582	3,032	Salina....	2,998 3,003	Trenton..	.....	.....	61	Show of gas.
1	4	Mining Claims Trust..... Geo. Ortt No. 1.....	500 ft. S. of N. line..... 50 ft. W. of E. road.	1935	585	683	Salina....	548	Grimsby.	5	165	50	Fresh water at 60 ft.
2	4	John Soder.....	500 ft. N. of S. line..... 200 ft. E. of W. road.....	.....	586	3,030	Salina....	495 2,940	Clinton... Trenton	.....	.....	18	Show of gas.
3	4	Jackson and Graff Syndicate.. John Ortt No. 1.....	1,560 ft. N. of S. road..... 522 ft. E. of W. road.	1938	586	598	Salina....	.....	.....	Dry hole.	.....	53	Fresh water at 57 ft., rose 35 ft. Black water at 230 ft.
2	5	C. Sauer.....	940 ft. W. of E. road..... 275 ft. N. of S. line.	1938	586	.....	.....	.....	.....	.....	.....	.....	Drilling Sept. 16, 1938.
1	7	W. C. Patterson..... R. Burns No. 3.....	150 ft. N. of S. road..... 1,500 ft. E. of W. road.	1933	578	625	Salina....	.....	.....	Dry hole.	.....	76	Fresh water at 130 ft.
1	7	R. Burns No. 4.....	100 ft. S. of N. line..... 400 ft. E. of W. road.....	1934	582	701	Salina....	530 628	Clinton... Whirlpool	22	290	80	Fresh water at 120 ft. Sulphur water at 300 ft.
2	7	W. C. Patterson..... J. Walters No. 1.....	500 ft. S. of N. road..... 950 ft. W. of E. road.....	1933	582	669	Salina....	537 618	Clinton... Whirlpool	27	300	78	Fresh water at 132 ft. Sulphur water at 280 ft.
2	7	J. Walters No. 2.....	SE. Corner.....	1933	582	625	Salina....	.....	.....	Dry hole.	.....	73	Fresh water at 135 ft. Sulphur water at 285 ft.

Wells in Willoughby Township, Welland County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
2	7	J. Walters No. 3	50 ft. N. of S. line, 1,500 ft. E. of W. road.	1933	582	700	Salina	616	Whirlpool	35	300	77	Fresh water at 127 ft.
2	7	J. Walters No. 4	400 ft. S. of N. road, 1,100 ft. E. of W. road.	1933	581	660	Salina	612	Whirlpool	17	300	86	Fresh water at 125 ft. Sulphur water at 295 ft.
3	7	W. C. Patterson, J. Slack No. 1	100 ft. N. of S. road, 1,500 ft. E. of W. road.	1933	583	670	Salina	596	Whirlpool	65	285	82	Fresh water at 60 and 125 ft. Sulphur water at 270 ft.
3	7	J. Slack No. 2	500 ft. S. of N. line, 1,300 ft. W. of E. road.	1934	583	611	Salina	.....	.....	Dry hole.	.....	80	
15	B.F.N.R.	F. A. Schwegler No. 1	400 ft. S. of N. road, 200 ft. W. of E. road.	1935	572	665	Salina	.....	.....	Dry hole.	.....	22	Fresh water at 35 ft.
15	B.F.N.R.	F. A. Schwegler No. 2	100 ft. N. of S. road, 1,000 ft. W. of E. road.	1935	578	709	Salina	.....	.....	Dry hole.	.....	16	Fresh water at 40 ft.

Wells in Humberstone Township, Welland County

7	1	Provincial Natural Gas Co.... Mrs. Barnhardts No. 83.	NE. Corner	.....	605	.....	Onondaga	710	Clinton...	.....	.....	.....	
22	1	Provincial Natural Gas Co....	SE. Corner	1925	573	915	Onondaga	860	Whirlpool	25	60	12	
30	1	Sterling Gas Co..... C. E. Steele.	.....	1911	.....	840	Onondaga	.....	Grimsby.	20	.....	.....	Water at 700 ft.
33	1	Sterling Gas Co..... Chas. Wegerich No. 1.	SE. Corner	1925	584	871	Onondaga	.....	.....	Dry hole.	.....	8	
33	1	Chas. Wegerich No. 2	2,000 ft. N. of Lake Erie.. 400 ft. W. of E. road.	1925	574	918	Onondaga	717	Clinton...	10	295	11	
33	1	Ed. Wegerich No. 1	1,000 ft. N. of Lake Erie.. 50 ft. E. of W. line	1925	576	912	Onondaga	715 851	Clinton... Whirlpool	35	375	10	
33	1	Dominion Natural Gas Co.... Mrs. Ed. Wegerich No. 2....	4,850 ft. S. of N. road..... 100 ft. E. of W. line.	1931	576	700	Onondaga	.....	.....	Dry hole.	.....	.....	

		Canada Cement Co.	Port Colborne	1910	.....	848	Onondaga	.....	.....	.....	.....	.....	
9	2	Provincial Natural Gas Co...	700 ft. N. of S. road..... 100 ft. E. of W. line.	.....	589	893	?	.....	.....	4,500	.....	.....	
19	2	Sterling Gas Co..... J. Archibald No. 1.....	2,600 ft. N. of S. road..... 300 ft. E. of W. line.	1929	597	691	?	.....	.....	.....	.....	.....	Abandoned.
20	2	Sterling Gas Co..... J. Krames.....	2,500 ft. N. of S. road..... 600 ft. W. of E. line.	1912	597	886	Onondaga	.....	.....	.....	120	.....	
21	2	Dominion Natural Gas Co.... Provincial H.E. Co. No. 1.	.....	1930	.....	728	Onondaga	.....	.....	.....	.....	.....	
21	2	Sterling Gas Co..... Wm. Fry.....	1,150 ft. N. of S. road..... 50 ft. W. of E. road.	1910	591	826	Onondaga	.....	.....	.....	.....	.....	Abandoned.
21	2	Sterling Gas Co..... Ott No. 1.....	2,500 ft. N. of S. road..... 300 ft. W. of E. road.	1912	598	880	Onondaga	.....	.....	.....	42	.....	
23	2	Sterling Gas Co..... J. Bearss.....	2,600 ft. S. of N. road..... 100 ft. E. of W. line.....	1911	593	859	Onondaga	....	Clinton... Whirlpool	20 118	195	.....	
24	2	Sterling Gas Co..... Mrs. Rauch.....	3,250 ft. N. of S. road..... 550 ft. E. of W. road.....	1910	589	867	Onondaga	....	Clinton... Whirlpool	75	85	.....	
24	2	Sterling Gas Co..... M. Augustine.....	2,300 ft. N. of S. road..... 500 ft. W. of E. line.	1911	586	820	Onondaga	.....	Clinton...	30	65	.....	Abandoned.
25	2	Sterling Gas Co..... J. Wickman.....	2,850 ft. S. of N. road..... 300 ft. E. of W. line.	1912	590	810	Onondaga	.....	Clinton...	38	.....	.....	Abandoned.
30	2	Sterling Gas Co..... M. Neff.....	500 ft. N. of S. road..... 500 ft. E. of W. road.	1906	593	830	Onondaga	690	Clinton...	39	.....	.....	Abandoned.
14	3	Provincial Natural Gas Co....	2,200 ft. S. of N. road..... 100 ft. E. of W. road.	.....	599	.....	Salina....	.....	Clinton...	60	.....	.....	
23	3	Sterling Gas Co..... C. Detterling.....	1,200 ft. S. of N. road..... 100 ft. E. of W. line.....	1908	582	785	Salina....	608 730	Clinton... Whirlpool	150	260	.....	
24	3	Sterling Gas Co..... J. Neff.....	2,100 ft. S. of N. road..... 50 ft. E. of W. road.	1909	580	757	Salina....	611	Clinton...	170	120	.....	Abandoned.
24	3	Sterling Gas Co..... R. Ramey.....	3,200 ft. S. of N. road..... 650 ft. W. of E. road.	1909	581	645	Salina....	611	Clinton...	60	85	.....	Abandoned.
27	3	Sterling Gas Co..... M. Richardson.....	3,100ft N. of S. road..... 300ft. E. of W. line.	1907	602	800	Salina....	637	Clinton...	221	.....	.....	Salt water at 400 ft.
28	3	Sterling Gas Co..... W. Kinsley.....	2,800 ft. S. of N. road..... 50 ft. W. of E. line.	1907	608	706	Salina....	634	Clinton...	230	156	.....	
29	3	Sterling Gas Co..... E. B. Near No. 1.....	2,350 ft. N. of S. road..... 350 ft. E. of W. line.	1907	598	799	Salina....	.....	.....	85	.....	.....	

Wells in Humberstone Township, Welland County — Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
29	3	Sterling Gas Co. E. B. Near No. 2	1,700 ft. N. of S. road..... 100 ft. W. of E. road.	1908	602	790	Salina....	642	Clinton...	50	125	.....	
29	3	Sterling Gas Co. W. Winger	3,200 ft. S. of N. road..... 200 ft. W. of E. road.	1907	603	804	Salina....	635	Clinton...	100	149	.....	
13	4	Industrial Gas Co. Joe Hopp	1,800 ft. S. of N. road..... 100 ft. W. of E. road.	1919	590	738	Salina....	589	Clinton...	50	90	64	
23	4	Sterling Gas Co. M. Noxell	1,200 ft. N. of S. road..... 300 ft. W. of E. road.....	1908	582	779	Salina....	....	Clinton... Whirlpool	40 10	155	.....	
27	4	Scilly No. 1	1,300 ft. S. of N. road..... 100 ft. W. of E. road.	1929	575	580	.....	.....	.....	Dry hole.	.....	.....	
32	4	Provincial Natural Gas Co.... Wilson Estate	3,200 ft. N. of S. road..... 50 ft. E. of W. road.	1905	576	709	Salina....	.....	Clinton...	460	.....	.....	
32	4	Provincial Natural Gas Co... Chas. Sagert	1,100 ft. S. of N. road..... 50 ft. W. of E. line.	1905	578	602	Salina....	.....	Clinton...	200	.....	.....	
4	5	Industrial Gas Co. P. Keabal	1,000 ft. S. of N. road..... 900 ft. E. of W. road.	1919	584	711	Salina....	659	Whirlpool	36	250	86	
18	5	Provincial Natural Gas Co....	SE. Corner.....	.....	583	592	Salina....	.....	Clinton...	600	.....	.....	
24	5	Provincial Natural Gas Co.... Bartz No. 222	700 ft. N. of S. road..... 150 ft. E. of W. road.	1905	579	677	Salina....	.....	Clinton...	2,000	.....	.....	
24	5	Provincial Natural Gas Co.... N. Herdman No. 283	350 ft. N. of S. road..... 150 ft. E. of W. road.	.....	579	.....	Salina....	.....	.....	165	.....	.....	

Wells in Wainfleet Township, Welland County

1	1	Sterling Gas Co. C. E. Steele No. 1	600 ft. E. of W. road..... On lake front.....	1925	579	912	Onondaga	740 862	Clinton... Whirlpool	15 15	375	9	
1	1	C. E. Steele No.72	6,000 ft. S. of N. road..... 100 ft. E. of W. road.....	1925	585	867	Onondaga	730 847	Clinton... Whirlpool	25 5	295	20	

13	1	Sterling Gas Co.	SW. Corner	1922	584	877	Onondaga					13	Abandoned.
14	1	Sterling Gas Co.	SW. Corner	1922	580	871	Onondaga					4	Abandoned.
25	1	B. J. Camby	SW. Corner	1919	584	877	Onondaga	705	Clinton			79	
26	1	B. J. Camby	5,200 ft. S. of N. road, 450 ft. E. of W. line.	1919	583	870	Onondaga	695	Clinton			147	
28	1	Nottawa Gas Co., J. Koerner No. 1	5,600 ft. S. of N. road, 600 ft. W. of E. road.	1936	585	882	Onondaga	722	Clinton	17		42	Fresh water at 54 ft., rises 30 ft.
28	1	J. Koerner No. 2	4,500 ft. S. of N. road, 600 ft. W. of E. road.	1936	584	872	Onondaga			Dry hole.		50	Sulphur water at 125 ft.
28	1	Nottawa Gas Co., A. Minor No. 1	800 ft. S. of N. road, 100 ft. W. of E. road.	1936	579	830	Onondaga			Dry hole.		128	Fresh water at 90 ft., rises 75 ft. Black water at 150 ft.
28	1	A. Minor No. 2	900 ft. N. of S. road, 100 ft. W. of E. road.	1937	585	805	Onondaga	634	Clinton	12	200	46	Fresh water at 25 ft., rises 5 ft. Black water at 60 ft.
29	1	A. P. K. Syndicate, F. Upfold No. 1	600 ft. S. of N. line, 450 ft. E. of W. road.	1936	576	823	Salina			Dry hole.		140	Fresh water at 110 ft., rises 100 ft. Sulphur water at 465 ft.
31	1	Armitage Syndicate, E. Neff No. 1	200 ft. W. of E. line, 400 ft. N. of lake shore road.	1937	581		Onondaga						
33	1	Sterling Gas Co., W. Hughes No. 59	100 ft. S. of N. line, 600 ft. E. of W. road.	1917	577	805	Salina	663	Clinton	15	215	156	Abandoned.
1	2	Sterling Gas Co., M. Minor	1,300 ft. N. of S. road, 550 ft. W. of E. road.	1906	581	710	Onondaga	665	Clinton	78	84		
31	2	United Gas Co., G. Gifford No. 1.		1929			Onondaga			Dry hole.			
7	3	Provincial Natural Gas Co.	3,000 ft. S. of N. line, 400 ft. E. of W. road.	1908	582	3,135	Onondaga						
32	3	Dominion Natural Gas Co., J. Gilmore No. 1	2,000 ft. N. of S. line, 25 ft. E. of W. line	1930	582	743	Onondaga						Abandoned.
34	3	Dominion Natural Gas Co., J. Mains No. 1	2,050 ft. N. of S. line, 550 ft. W. of E. road.		583		Onondaga						Abandoned.
35	3	Dominion Natural Gas Co., Stayzer No. 1	2,000 ft. N. of S. line, 100 ft. E. of W. road.	1930	581		Onondaga						Abandoned.
12	4	Provincial Natural Gas Co.	NE. Corner		579	745	Onondaga	656	Whirlpool	400			

Wells in Wainfleet Township, Welland County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
13	4	Provincial Natural Gas Co....	2,350 ft. S. of N. road..... 100 ft. W. of E. line.	1906	581	765	Onondaga	.....	.....	.....	.....	.....	
14	4	Provincial Natural Gas Co....	2,200 ft. S. of N. road..... 50 ft. E. of W. line.	.....	580	758	Onondaga	.....	.....	.. 125	.....	.....	
39	5	Western Ontario Natural Gas Co. R. Shafley No. 1.	100 ft. S. of N. road..... 750 ft. E. of W. road.	1935	580	640	Salina....	616	Whirlpool	25	.....	121	Fresh water at 122 ft. Salt water at 215 ft.
37	6	W. Ricker.....	1,100 ft. S. of N. road..... 100 ft. W. of E. line.	1935	584	600	Salina....	.....	.....	Dry hole.	.....	114	Fresh water at 115 ft. Salt water at 190 ft.
38	6	J. Lampman No. 1.....	2,300 ft. N. of S. road..... 50 ft. W. of E. road.	1935	582	632	Salina....	596	Whirlpool	42	235	114	Fresh water at 115 ft. Salt water at 210 ft.
38	6	Romney Gas Co..... J. Lampman No. 1.	SE. Corner.....	1936	581	673	Salina....	515 555	Clinton... Grimsby	20	200	126	Fresh water at 130 ft. Salt water at 250 ft.
39	6	Romney Gas Co..... Putnam No. 1.....	50 ft. N. of S. line..... 1,000 ft. E. of W. road.	1937	579	662	Salina....	595	Whirlpool	35	235	112	Fresh water at 120 ft. Salt water at 250 ft.
39	6	Romney Gas Co..... G. Shoults No. 1.....	1,000 ft. N. of S. road..... 50 ft. E. of W. road.	1936	577	673	Salina....	605	Whirlpool	24	220	113	Fresh water at 123 ft.
40	6	Romney Gas Co..... D. H. Cohoe No. 1.....	700 ft. W. of E. road..... 40 ft. N. of ry.	1937	579	659	Salina....	594	Whirlpool	20	215	110	Fresh water at 112 ft., rises 92 ft. Salt water at 250 ft.
58	7	Wainfleet Gas Co..... L. Zimmerman.	NE. Corner.....	1934	576	521	Salina....	400	Clinton...	13	155	69	

Wells in Pelham Township, Welland County

9	12	Provincial Natural Gas Co. No. 348.	SE. Corner.....	.....	591	682	Salina....	.....	.....	Dry hole.	.....	.....	
12	12	Provincial Natural Gas Co. J. K. Page.	NW. Corner.....	1912	597	550	Salina....	532	Whirlpool	10	.....	.....	

15	12	Provincial Natural Gas Co... L. Rogers.	NW. Corner.....	1913	593	600	Salina....	536	Whirlpool	.....	.....	.....	
13	13	Provincial Natural Gas Co.... E. Lewis.	NW. Corner.....	1913	588	585	Salina....	.....	.....	Dry hole.	.....	.....	
4	14	Provincial Natural Gas Co. No. 345.	NE. Corner.....	.....	588	590	Salina....	.....	.....	Dry hole.	.....	.....	
17	14	Provincial Natural Gas Co.... M. Chambers.	NW. Corner.....	1913	585	603	Salina....	.....	.....	Dry hole.	.....	.....	

Wells in Thorold Township, Welland County

231	.....	Gainer farm.....	700 ft. S. of N. road..... 100 ft. W. of E. road.	.....	587	580	Guelph...	.....	.....	.....	.....	88	
202	.....	.....	SE. Corner.....	1903	570	531	Guelph...	.....	.....	.....	.....	75	

Wells in Caistor Township, Lincoln County

1	1	Grimsby Gas Co..... Laidlaw No. 1.....	1,500 ft. S. of N. road..... 600 ft. W. of E. road.....	1930	597	604	Salina....	461 549	Grimsby. Whirlpool	34	170	73	
1	1	Laidlaw No. 2.....	2,400 ft. S. of N. road..... 600 ft. E. of W. line.	1930	599	555	Salina....	.....	.....	Dry hole.	.....	78	
1	1	Grimsby Gas Co..... E. W. Fralic.....	100 ft. S. of N. road..... 1,000 ft. W. of E. road.....	1930	598	590	Guelph...	440 541	Grimsby. Whirlpool	19	180	89	
4	1	Grimsby Gas Co..... Merritt.....	400 ft. S. of N. road..... 100 ft. E. of W. line.....	1930	575	548	Guelph...	394 485	Grimsby. Whirlpool	24	130	54	
4	1	Dominion Natural Gas Co.... A. Austin No. 1.....	400 ft. N. of S. road..... 600 ft. E. of W. line.	1931	586	549	Salina....	.....	.....	8	90	74	Fresh water at 80 ft. Black water at 160 ft.
5	1	Grimsby Gas Co..... V. Merritt.....	50 ft. S. of N. road..... 700 ft. E. of W. road.	1930	592	543	Guelph...	493	Whirlpool	35	125	70	
6	1	J. Merritt No. 10A.....	1,200 ft. S. of N. road..... 100 ft. W. of E. road.	1930	594	549	Guelph...	499	Whirlpool	125	135	67	
6	1	J. Merritt No. 11A.....	2,100 ft. S. of N. road..... 200 ft. W. of E. road.	1930	590	552	Guelph...	487	Whirlpool	100	135	67	
6	1	J. Merritt No. 13A.....	1,300 ft. N. of S. road..... 500 ft. W. of E. road.....	1930	595	538	Guelph...	424 503	Grimsby. Whirlpool	15	120	73	

Wells in Caistor Township, Lincoln County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
6	1	Grimsby Gas Co..... Silverthorne No. 15A.....	2,000 ft. S. of N. road..... 500 ft. E. of W. line.....	1930	593	551	Guelph...	370 511	Clinton... Whirlpool	44	135	67	
8	1	Dominion Natural Gas Co.... A. Silverthorne No. 1.	SE. Corner.....	1931	599	525	Salina....	388 515	Clinton... Whirlpool	20	150	73	Fresh water at 75 ft., rises 47 ft. Black water at 180 ft., rises 150 ft.
8	1	A. Silverthorne No. 2.....	950 ft. N. of S. road..... 50 ft. W. of E. line.....	1931	601	576	Salina....	403 513	Clinton... Whirlpool	10	110	68	Fresh water at 75 ft., rises 45 ft.
8	1	Dominion Natural Gas Co.... G. W. Killins No. 1.....	300 ft. S. of N. road..... 1,000 ft. W. of E. line.	1913	576	500	Guelph...	.....	.....	.....	.....	37	
8	1	G. W. Killins No. 2.....	1,400 ft. S. of N. road..... 850 ft. E. of W. line.	1913	604	557	Guelph...	.....	.....	110	.....	68	
8	1	G. W. Killins No. 3.....	1,900 ft. N. of S. road..... 750 ft. E. of W. line.	1913	604	596	Guelph...	.....	.....	67	.....	67	
8	1	G. W. Killins No. 4.....	50 ft. N. of S. road..... 800 ft. E. of W. line.....	1931	602	528	Salina....	391 431	Clinton... Grimsby.	28 33	130	66	Fresh water at 70 ft. Sulphur water at 170 ft.
9	1	Dominion Natural Gas Co.... E. Swick No. 1.	NE. Corner.....	1913	578	526	Salina....	.....	.....	156	.....	40	
9	1	Dominion Natural Gas Co.... Greenwood No. 3.....	50 ft. N. of S. road..... 600 ft. W. of E. line.	1930	604	526	Salina....	383	Clinton...	71	125	79	Fresh water at 68 ft. Black water at 250 ft.
9	1	Greenwood No. 4.....	1,400 ft. N. of S. road..... 700 ft. W. of E. line.....	1931	606	521	Salina....	398 430 433	Clinton... Grimsby. Grimsby.	12 23 10	142	58	Fresh water at 150 ft. Sulphur water at 290 ft.
9	1	Dominion Natural Gas Co.... E. Swick No. 2.....	350 ft. S. of N. road..... 750 ft. E. of W. line.	1913	601	557	Guelph...	.....	.....	.....	.....	72	Abandoned.
10	1	Dominion Natural Gas Co.... B. Warner No. 1.	.....	1913	.....	532	Guelph...	.....	.....	157	.....	38	
10	1	M. D. and H. Warner No. 1.	.....	.....	.....	524	Guelph...	.....	.....	125	.....	36	

10	1	M. G. Warner No. 2		1913		530	Guelph			156		55		
10	1	D. Warner No. 3		1913		555	Guelph			55		65		
11	1	M. G. Warner No. 1				505	Guelph			35		28		
13	1	Dominion Natural Gas Co.... Geo. McDonald	1,400 ft. N. of S. road..... 50 ft. W. of E. line.	1913	609	560	Guelph			Dry hole.		56		
14	1	Dominion Natural Gas Co.... K. Lymburner No. 1.		1913		562	Guelph			34		55		
15	1	Dominion Natural Gas Co.... Shields No. 1	800 ft. S. of N. road..... 700 ft. W. of E. line.	1916	603	487	Guelph			Dry hole.		40		
15	1	Dominion Natural Gas Co.... G. Lymburner No. 1.	NW. Corner	1913	610	524	Guelph			55		60	Abandoned.	
22	1	Dominion Natural Gas Co.... R. Mitchell No. 1	1,750 ft. S. of N. road..... 350 ft. W. of E. line.	1913	597	481	Guelph			73		22		
22	1	Dominion Natural Gas Co.... F. Dennis No. 1.	NE. Corner	1913	619	497	Guelph			80		60		
22	1	John Harkness	2,450 ft. S. of N. road..... 100 ft. E. of W. line.		604	479	Guelph			55		28	Abandoned.	
23	1	Dominion Natural Gas Co.... R. H. Mitchell No. 1	2,000 ft. N. of S. road..... 800 ft. E. of W. line.	1913	617	498	Guelph			93		39		
23	1	Dominion Natural Gas Co.... J. Hewitt No. 1	1,000 ft. N. of S. road..... 800 ft. W. of E. line.	1913	600	454	Guelph			Dry hole.		30		
24	1	Dominion Natural Gas Co.... N. Johnson No. 1	50 ft. N. of S. road..... 900 ft. W. of E. line.	1913	618	520	Guelph			Dry hole.		62		
24	1	N. Johnson No. 2	1,000 ft. N. of S. line..... 450 ft. W. of E. line.	1913	595	491	Guelph			42		24	Abandoned.	
24	1	Dominion Natural Gas Co.... A. E. Sharpe No. 1	650 ft. N. of S. road..... 100 ft. E. of W. line.	1913	610	498	Guelph			87		49	Abandoned.	
24	1	Dominion Natural Gas Co.... J. T. Grant No. 1.	NE. Corner	1913	631	507	Guelph			185		56		
24	1	J. T. Grant No. 2	1,850 ft. S. of N. road..... 650 ft. W. of E. line.....	1931	619	484	Guelph	347 427	Clinton... Whirlpool	2 20	90	53	Water at 100 ft.	
25	1	Dominion Natural Gas Co.... A. J. Morris No. 1	950 ft. S. of N. road..... 400 ft. E. of W. road.....	1931	636	500	Guelph	328 369 449	Clinton... Grimsby Whirlpool	27	90	60	Water at 80 and 200 ft.	
25	1	A. J. Morris No. 2	2,150 ft. S. of N. road..... 50 ft. W. of E. line.....	1931	621	488	Guelph	318 439	Clinton... Whirlpool	2 32	90	53	Fresh water at 100 ft.	

Wells in Caistor Township, Lincoln County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
25	1	Dominion Natural Gas Co.... W. Roy.....	900 ft. N. of S. road..... 1,000 ft. E. of W. road.	1913	597	493	Guelph...	.....	.....	.....	.....	37	
1	2	Lincoln Gas Co..... E. Fralick.....	700 ft. N. of S. road..... 300 ft. W. of E. road.	1925	587	515	Salina....	.....	.....	26	220	78	
1	2	Grimsby Gas Co..... J. A. Black No. 1.	NE. Corner.....	1934	595	545	Salina....	484	Whirlpool	80	128	85	
4	2	Grimsby Gas Co..... M. A. Lymburner No. 20A..	450 ft. N. of S. road..... 100 ft. E. of W. line.....	1930	593	548	Guelph...	412 501	Grimsby. Whirlpool	35	130	78	
5	2	A. J. Merritt No. 9A.....	300 ft. S. of N. road..... 750 ft. E. of W. road.	1930	603	534	Guelph...	499	Whirlpool	25	129	70	
6	2	W. G. Lymburner No. 18A.	750 ft. N. of S. road..... 750 ft. W. of E. road.	1930	597	541	Guelph...	485	Whirlpool	48	135	58	
6	2	G. McCready No. 7A.....	1,200 ft. S. of N. road..... 300 ft. W. of E. road.	1930	595	493	Guelph...	415	Grimsby.	58	130	57	
6	2	G. McCready No. 6A.....	500 ft. S. of N. road..... 600 ft. W. of E. road.	1929	597	539	Guelph...	489	Whirlpool	30	125	63	
8	2	Grimsby Gas Co..... P. Lymburner No. 2A.....	950 ft. S. of N. road..... 350 ft. W. of E. line.....	1930	604	542	Guelph...	420 483	Grimsby. Whirlpool	65	125	59	
8	2	E. Lymburner No. 3A.....	900 ft. S. of N. road..... 650 ft. E. of W. line.	1930	607	502	Guelph...	.....	.....	Dry hole.	.....	50	
9	2	Grimsby Gas Co..... J. Killins No. 12A.....	50 ft. S. of N. road..... 600 ft. W. of E. line.	1930	607	539	Guelph...	481	Whirlpool	60	130	56	
11	2	Dominion Natural Gas Co.... Beatty No. 1.....	400 ft. N. of S. road..... 150 ft. W. of E. road.	.....	606	546	Guelph...	.....	.....	40	.....	75	Abandoned.
14	2	Dominion Natural Gas Co.... F. Lymburner No. 1.	SE. Corner.....	1913	610	537	Guelph...	.....	.....	Dry hole.	.....	50	
14	2	Dominion Natural Gas Co.... A. Shields.....	1,200 ft. N. of S. road..... 150 ft. E. of W. line.	1913	607	527	Guelph...	.....	.....	252	.....	64	

15	2	.....	2,300 ft. N. of S. road..... 150 ft. E. of W. road.	1913	614	482	Guelph...	.....	.....	.....	.....	64	
16	2	Dominion Natural Gas Co.... J. Phillips No. 1.....	750 ft. N. of S. road..... 100 ft. W. of E. road.	1912	590	482	Guelph...	.....	.....	48	.....	64	Abandoned.
19	2	Dominion Natural Gas Co.... G. Lymburner.....	800 ft. N. of S. road..... 50 ft. W. of E. line.	1913	608	504	Guelph...	.....	.....	Dry hole.	.....	58	
23	2	Dominion Natural Gas Co.... J. Berry No. 1.	SE. Corner.....	1930	630	461	Guelph...	.....	.....	.....	.....	72	Abandoned. Fresh water at 118 ft.
23	2	J. Berry No. 2.....	1,100 ft. N. of S. road..... 200 ft. E. of W. line.....	1931	632	490	Guelph...	322 435	Clinton... Whirlpool	41	115	74	Abandoned.
23	2	J. Berry No. 3.....	2,400 ft. N. of S. road..... 400 ft. W. of E. line.	1931	608	479	Guelph...	304 431	Clinton... Whirlpool	47	117	57	Abandoned. Fresh water at 70 ft.
23	2	Dominion Natural Gas Co.... J. Walker No. 1.....	2,600 ft. N. of S. road..... 350 ft. E. of W. line.....	1931	621	451	Guelph...	317 431	Clinton... Whirlpool	7	120	79	Abandoned. Fresh water at 100 ft.
24	2	Dominion Natural Gas Co.... J. Green No. 1.....	100 ft. N. of S. road..... 400 ft. E. of W. line.	1913	636	497	Guelph...	.....	.....	95	.....	66	
24	2	J. Green No. 2.....	900 ft. N. of S. road..... 750 ft. E. of W. line.....	1931	626	494	Guelph...	319 356 434	Clinton... Grimsby. Whirlpool	10 24 19	115	70	Sulphur water at 110 ft.
25	2	Dominion Natural Gas Co.... C. O'Neill.....	350 ft. N. of S. road..... 100 ft. E. of W. road.	1913	628	495	Guelph...	.....	.....	61	.....	80	
1	3	Grimsby Gas Co..... Cynthia Killins No. 1.....	52 ft. W. of E. road..... 2,020 ft. S. of N. road.....	1937	589	514	Salina....	335 365 460	Clinton... Grimsby. Whirlpool	10 25	150	65	Fresh water at 55 ft., rises 40 ft.
1	3	Lincoln Gas Co..... M. Lymburner No. 1.....	100 ft. N. of S. road..... 350 ft. W. of E. road.....	1935	597	583	Salina....	399 520	Clinton... Whirlpool	36	125	75	
1	3	M. Lymburner No. 2.....	900 ft. N. of S. road..... 850 ft. W. of E. road.....	1935	593	549	Salina....	400 495	Grimsby. Whirlpool	50	130	73	
1	3	Lincoln Gas Co..... Neigarth No. 1.....	1,200 ft. N. of S. road..... 100 ft. W. of E. line.....	1935	590	539	Salina....	397 489	Grimsby. Whirlpool	50	125	72	
1	3	Neigarth No. 2.....	1,600 ft. N. of S. road..... 850 ft. W. of E. road.	1935	594	543	Salina....	488	Whirlpool	18	125	77	Sulphur water at 40 ft.
1	3	Neigarth No. 3.....	2,350 ft. N. of S. road..... 750 ft. W. of E. road.....	1935	590	520	Salina....	358 465	Clinton... Whirlpool	78	125	65	Sulphur water at 15 ft.
2	3	Chippewa Gas Co..... Beamer.....	1,150 ft. N. of S. road..... 600 ft. E. of W. line.	1920	600	515	Guelph...	.....	.....	93	175	68	
3	3	A. Beamer.....	SE. Corner.....	1920	.....	513	Guelph...	.....	.....	Dry hole.	.....	68	

Wells in Caistor Township, Lincoln County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
4	3	Grimsby Gas Co..... C. Killins No. 1.....	1,250 ft. N. of S. road..... 450 ft. E. of W. line.....	1930	599	535	Guelph...	385 480	Grimsby. Whirlpool	80	120	66	
4	3	I. Killins No. 16A.....	1,500 ft. N. of S. road..... 250 ft. W. of E. road.....	1930	596	537	Guelph...	347 485	Clinton... Whirlpool	48	130	76	
4	3	I. Killins.....	325 ft. W. of E. road.... 775 ft. S. of N. road....	1938	604	499	Salina....	457	Whirlpool			77	Fresh water at 70 ft., rises 35 ft.
5	3	J. Killins No. 5A.....	800 ft. N. of S. road..... 650 ft. E. of W. road.....	1929	604	543	Guelph...	381 441	Clinton... Grimsby	14	120	53	
7	3	Grimsby Gas Co..... D. Lounsberry No. 1A.....	150 ft. N. of S. road..... 600 ft. E. of W. line.....	1929	601	548	Guelph...	425 498	Grimsby. Whirlpool	30	130	.....	
8	3	Grimsby Gas Co..... Geo. Lounsberry No. 4A....	150 ft. N. of S. road..... 600 ft. E. of W. line.	1929	603	523	Guelph...	458	Whirlpool	45	125	57	
12	3	Dominion Natural Gas Co.... J. Leslie No. 1.....	450 ft. N. of S. road..... 750 ft. W. of E. line.	1913	607	509	Guelph...	.....	.....	20	.....	55	Abandoned.
14	3	Dominion Natural Gas Co.... J. Carson No. 1.....	100 ft. N. of S. road..... 950 ft. E. of W. line.	1913	616	514	Guelph...	.....	.....	96	.....	60	
2	4	Chippewa Gas Co..... A. Beamer.....	1,150 ft. N. of S. road..... 600 ft. E. of W. line.	1919	605	502	Guelph...	.....	.....	Dry hole.	.....	55	
3	4	Chippewa Gas Co..... F. Wardell.	SE. Corner.....	1919	600	484	Guelph...	.....	.....	Dry hole.	.....	65	
20	6	.....	SW. Corner.....	1922	648	420	Guelph...	.....	.....	.....	.....	.....	

Wells in Gainsborough Township, Lincoln County

2	B.F.	Lincoln Gas Co..... J. Swazac.....	550 ft. S. of N. line..... 800 ft. W. of E. line.	1925	566	515	Salina....	.....	.....	29	250	.....	
3	B.F.	Lincoln Gas Co..... Zunstein No. 1.....	1,500 ft. S. of N. line..... 500 ft. W. of E. line.	1934	589	562	Salina....	.....	.....	10	.....	.....	

3	B.F.	Wainfleet Gas Co..... R. Harrington No. 1.....	1,600 ft. S. of N. line..... 1,400 ft. W. of E. line.	1934	589	557	Salina....	419	Clinton...	22	185	80	
3	B.F.	R. Harrington No. 2.....	400 ft. S. of N. line..... 350 ft. E. of W. line.....	1934	591	560	Salina....	395 528	Clinton... Whirlpool	30	156	91	Fresh water at 91 and 110 ft.
3	B.F.	Wainfleet Gas Co..... Chas. Krick.....	300 ft. S. of N. line..... 800 ft. W. of E. line.....	1934	583	535	Salina....	394 461	Clinton... Grimsby	7	175	.....	Abandoned.
4	B.F.	Wainfleet Gas Co..... H. Zunstein No. 2.....	1,400 ft. S. of N. line..... 150 ft. E. of W. line.	1934	590	562	Salina....	522	Whirlpool	18	215	89	Fresh water at 84 ft.
4	B.F.	Wainfleet Gas Co..... C. Harrington No. 1.....	2,100 ft. S. of N. line..... 50 ft. E. of W. line.	1934	589	570	Salina....	527	Clinton...	16	215	91	Fresh water at 96 ft.
24	B.F.	United Gas Co..... Blanchard No. 13.....	5,200 ft. S. of N. road..... 700 ft. E. of W. line.	.....	583	546	Salina....	.....	.....	20	.....	.....	
1	1	Lincoln Gas Co..... R. Carter No. 1.....	100 ft. N. of S. line..... 500 ft. E. of W. road.	1925	569	515	Salina....	.....	.....	110	220	68	
1	1	Wainfleet Gas Co..... R. Carter No. 2.....	1,700 ft. N. of S. line..... 200 ft. E. of W. road.	1934	595	530	Salina....	340	Clinton...	13	185	89	Fresh water at 94 ft. Salt water at 129 ft.
1	1	R. Carter No. 3.....	NW. Corner.....	1934	594	520	Salina....	390	Clinton...	12	155	80	
1	1	Lincoln Gas Co..... M. Angle No. 1.	.....	1932	.....	498	Salina....	.....	.....	10	160	73	Fresh water at 80 ft.
1	1	Wainfleet Gas Co..... M. Angle No. 2.....	100 ft. S. of N. road..... 250 ft. W. of E. line.	1934	596	535	Salina....	394	Clinton...	10	155	81	Salt water at 144 ft.
1	1	M. Angle No. 3.....	50 ft. S. of N. road..... 1,000 ft. W. of E. line.....	1934	595	557	Salina....	397 527	Clinton... Whirlpool	40	183	86	Fresh water at 91 ft. Salt water at 143 ft.
2	1	Wainfleet Gas Co..... D. Burritt No. 1.....	1,800 ft. N. of S. line..... 50 ft. E. of W. line.	1934	593	559	Salina....	.....	.....	Dry hole.	.....	80	Fresh water at 74 ft.
2	1	Wainfleet Gas Co..... J. Swayzie No. 1.....	10 ft. N. of S. line..... 450 ft. W. of E. line.	1934	593	595	Salina....	390	Clinton...	30	180	75	
2	1	Lincoln Gas Co..... J. Swayzie No. 2.....	500 ft. N. of S. line..... 1,000 ft. W. of E. line.	1934	594	531	Salina....	396	Clinton...	33	165	73	
23	1	United Gas Co..... A. Johnston.	NE. Corner.....	1916	597	576	Salina....	.....	.....	76	.....	.....	
24	1	United Gas Co..... Blanchard No. 14.....	2,650 ft. S. of N. road..... 500 ft. E. of W. line.	1916	592	589	Salina....	.....	.....	Dry hole.	.....	127	
24	1	United Gas Co..... S. Heaslip No. 1.....	350 ft. N. of S. road..... 50 ft. W. of E. line.	1915	587	570	Salina....	.....	.....	1½	.....	136	

Wells in Gainsborough Township, Lincoln County — Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
26	1	United Gas Co. R. Lambert No. 1	1,500 ft. S. of N. road. 700 ft. W. of E. road.	1915	600	588	Salina	.....	.....	30	.....	156	
26	1	R. Lambert No. 2	2,600 ft. S. of N. road. 650 ft. W. of E. road.	1916	596	590	Salina	.....	.....	30	.....	.....	
27	1	United Gas Co. Robins No. 1	1,050 ft. S. of N. road. 100 ft. E. of W. road.	1916	602	598	Salina	.....	.....	320	.....	154	
27	1	United Gas Co. S. Chambers No. 2	3,300 ft. S. of N. road. 100 ft. E. of W. road.	.....	593	601	Salina	.....	.....	3	.....	151	
28	1	United Gas Co. H. Rice No. 8.	NW. Corner	1916	605	602	Salina	.....	.....	53	.....	158	
1	2	Grimsby Gas Co. T. Beamer No. 1	2,000 ft. S. of N. road. 150 ft. E. of W. road.	1934	599	544	Salina	484	.....	85	128	82	Fresh water at 85 ft. Sulphur water at 100 ft.
1	2	Grimsby Gas Co. J. Black No. 3	1,500 ft. S. of N. road. 100 ft. E. of W. road.	1934	589	526	Salina	476	Whirlpool	38	130	67	Fresh water at 65 ft. Sulphur water at 70 ft.
1	2	Grimsby Gas Co. T. Beamer No. 1	825 ft. E. of W. road. 2,375 ft. S. of N. road.	1938	593	520	Salina	478	Whirlpool	25	.....	79	Sulphur water at 84 ft., rises 25 ft.
1	2	T. Beamer No. 2	825 ft. E. of W. road. 3,400 ft. S. of N. road.	1938	596	534	Salina	493	Whirlpool	20	.....	91	Sulphur water at 93 ft., rises 23 ft.
2	2	Lincoln Gas Co. E. Hartnett No. 1	1,600 ft. N. of S. road. 50 ft. E. of W. line	1936	595	522	Salina	480 492	Grimsby. Whirlpool	38	120	91	
2	2	E. Hartnett No. 2	2,200 ft. S. of N. road. 650 ft. E. of W. line	1936	592	495	Salina	484 495	Whirlpool	.....	.....	89	
2	2	Lincoln Gas Co. S. Vaughan No. 1	1,550 ft. N. of S. road. 950 ft. W. of E. line	1935	591	533	Salina	360 470	Clinton... Whirlpool	37	125	80	Sulphur water at 50 ft.
2	2	S. Vaughan No. 2	1,650 ft. N. of S. road. 50 ft. W. of E. line.	1936	583	493	Salina	.....	.....	Dry hole.	.....	76	
2	2	S. Vaughan No. 3	1,000 ft. N. of S. road. 300 ft. W. of E. line	1936	596	553	Salina	486 496	Whirlpool	14	115	87	

21	2	United Gas Co..... L. Robins No. 10.....	50 ft. N. of S. road..... 700 ft. W. of E. line.	1916	594	506	Salina....	.....	.....	12	.....	141	
25	2	United Gas Co..... Baldwin No. 6.....	500 ft. N. of S. road..... 600 ft. W. of E. line.	1916	604	584	Salina....	.....	.....	12	.....	153	
27	2	United Gas Co..... Tuck.....	50 ft. N. of S. road..... 300 ft. E. of W. line.	1916	605	558	Salina....	.....	.....	Dry hole.	.....	157	
20	3	United Gas Co..... E. Gee No. 9.	SW. Corner.....	1916	597	531	Guelph...	.....	.....	Dry hole.	.....	128	
34	5	Lincoln Gas Co..... D. F. North.....	100 ft. N. of S. road..... 500 ft. W. of E. road.	1925	614	450	Guelph...	.....	.....	23	195	87	
34	5	United Gas Co..... A. Johnston No. 4.	.....	1915	.....	595	.....	.....	.....	27	.....	152	
36	6	W. McCallum No. 1.....	575 ft. W. of E. line..... 150 ft. S. of N. road.	1937	611	455	Salina....	.....	Whirlpool	4	115	15	Fresh water at 24 ft., rises 12 ft.

Wells in Binbrook Township, Wentworth County

Lot	Con.	Block	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
1	3	4	G. Ecker No. 1	1,500 ft. S. of N. road..... 300 ft. W. of E. road.	1934	720	430	Guelph...	410	Whirlpool	28	50	92	Water at 115 and 285 ft.
4	4	2	Dominion Natural Gas Co.... J. Krick.	SE. Corner.....	1919	664	466	Guelph...	340 435	Clinton... Whirlpool	.....	.....	56	Abandoned.
4	4	3	Dominion Natural Gas Co.... B. Comfort.....	2,650 ft. N. of S. road..... 50 ft. E. of W. line.	1921	681	438	Guelph...	.....	.....	Dry hole.	.....	74	
5	4	3	Binbrook Gas Co..... H. Johnston.....	2,200 ft. N. of S. road..... 100 ft. E. of W. road.	1919	679	450	Guelph...	.....	.....	46	140	69	
1	4	4	Dominion Natural Gas Co.... H. Muir No. 1.....	700 ft. N. of S. road..... 200 ft. W. of E. road.....	1917	659	478	Guelph...	310 425	Clinton... Whirlpool	90	145	67	
2	4	4	Dominion Natural Gas Co.... T. Stinson.....	1,200 ft. N. of S. road..... 200 ft. W. of E. line.	1921	665	425	Guelph...	.....	.....	Dry hole.	.....	64	
2	4	4	Dominion Natural Gas Co.... W. E. Garinger.....	2,700 ft. N. of S. road..... 350 ft. W. of E. line.....	1920	671	477	Guelph...	330 425	Clinton... Whirlpool	.....	120	69	
3	4	4	Dominion Natural Gas Co.... W. McKinnell No. 1.....	2,500 ft. S. of N. road..... 150 ft. W. of E. line.....	1921	692	487	Guelph...	335 435	Clinton... Whirlpool	6 40	123	78	
4	4	4	Dominion Natural Gas Co.... Spencer No. 1.....	750 ft. N. of S. road..... 50 ft. W. of E. line.....	1921	660	478	Guelph...	315 420	Clinton... Whirlpool	43	120	80	Abandoned.
4	4	4	Spencer No. 2.....	3,000 ft. S. of N. road..... 100 ft. W. of E. line.	1921	685	473	Guelph...	.....	.....	40	125	80	
4	4	4	Dominion Natural Gas Co.... H. Johnston.....	900 ft. S. of N. road..... 20 ft. W. of E. line.	1920	712	485	Guelph...	.....	.....	80	150	74	
4	4	4	Dominion Natural Gas Co.... A. Dalgleish.	.....	1919	.....	487	Guelph...	.....	.....	.....	115	76	
5	4	4	Dominion Natural Gas Co.... R. Young.....	1,500 ft. S. of N. road..... 400 ft. W. of E. line.	1921	719	441	Guelph...	.....	.....	Dry hole.	.....	71	

Wells in Binbrook Township, Wentworth County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
17	7	Dominion Natural Gas Co.... A. Dalgleish No. 1.....	3,600 ft. S. of N. road..... 1,800 ft. W. of E. line.	1914	642	470	Guelph...	.....	.....	Dry hole.	.....	18	
17	7	A. Dalgleish No. 2.....	NE. Corner.....	1914	677	463	Guelph...	.....	.....	Dry hole.	.....	63	
18	7	Dominion Natural Gas Co.... Rowley.....	2,500 ft. S. of N. road..... 300 ft. W. of E. line.	1916	657	475	Guelph...	328	Grimsby.	.....	160	33	
20	7	Dominion Natural Gas Co.... J. Bier.....	1,350 ft. S. of N. road..... 400 ft. W. of E. road.	1921	661	472	Guelph...	.....	.....	40	120	48	
20	7	Dominion Natural Gas Co.... E. Harrison.....	3,200 ft. S. of N. road..... 300 ft. W. of E. line.....	1916	663	492	Guelph...	325 440	Clinton... Whirlpool	.....	145	39	
21	7	Dominion Natural Gas Co.... A. Spittel.....	2,100 ft. S. of N. road..... 100 ft. E. of W. line.	1916	644	477	Guelph...	.....	.....	42	150	36	
21	7	A. Spittel.....	700 ft. N. of S. line..... 900 ft. W. of E. line.....	1916	662	498	Guelph...	330 440	Grimsby. Whirlpool	39	145	40	
22	7	Dominion Natural Gas Co.... J. Patterson.....	1,800 ft. S. of N. road..... 100 ft. E. of W. road.	1916	623	464	Guelph...	406	Whirlpool	10	175	30	
22	7	J. Patterson.....	2,650 ft. S. of N. road..... 150 ft. E. of W. road.....	1916	622	479	Guelph...	326 420	Grimsby. Whirlpool	90	173	28	
23	7	Dominion Natural Gas Co.... C. Fletcher.....	100 ft. S. of N. road..... 900 ft. E. of W. line.....	1917	632	460	Guelph...	313 408	Grimsby Whirlpool	78	145	41	
24	7	Dominion Natural Gas Co.... A. Laidman.....	100 ft. S. of N. road..... 950 ft. W. of E. road.....	1917	666	484	Guelph...	330 434	Clinton... Whirlpool	45	142	71	
25	7	Dominion Natural Gas Co.... E. H. Laidman No. 1.....	750 ft. N. of S. line..... 650 ft. W. of E. line.....	1918	638	470	Guelph...	306 417	Clinton... Whirlpool	.....	142	51	
25	7	E. H. Laidman No. 2.....	2,800 ft. S. of N. road..... 100 ft. E. of W. road.....	1918	639	475	Guelph...	300 420	Clinton... Whirlpool	.....	160	40	
26	7	F. Laidman No. 1.....	650 ft. N. of S. line..... 350 ft. W. of E. line.	1918	645	496	Guelph...	.....	.....	.....	.....	54	

Wells in Binbrook Township, Wentworth County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
26	7	F. Laidman No. 2	NE. Corner	1919	654	430	Guelph			45			
26	7	Dominion Natural Gas Co.... Jas. Goodale No. 1.	SW. Corner	1917	636	466	Guelph					53	
26	7	Jas. Goodale No. 2	1,900 ft. S. of N. road.... 100 ft. E. of W. line.	1917	652	482	Guelph					51	
27	7	Dominion Natural Gas Co.... Jas. Laidman No. 1	800 ft. N. of S. line.... 600 ft. E. of W. line....	1919	645	485	Guelph	310 436	Clinton... Whirlpool	160		54	
27	7	Roy Laidman	700 ft. N. of S. line.... 300 ft. W. of E. line.	1919	650	443	Guelph			62		0	
28	7	Dominion Natural Gas Co.... W. Powell	1,200 ft. N. of S. line.... 1,000 ft. W. of E. road.	1919	659	454	Guelph			43		0	
29	7	W. Powell	SW. Corner	1919	656	456	Guelph			58		0	
30	7	Dominion Natural Gas Co.... Thom. Nichol.	SW. Corner	1919	652	450	Guelph			70		0	
17	8	Dominion Natural Gas Co.... T. Berry No. 1	1,800 ft. S. of N. line.... 150 ft. E. of W. road....	1913	665	502	Guelph	330 443	Clinton... Whirlpool		174	43	Abandoned.
17	8	T. Berry No. 2	1,750 ft. S. of N. line.... 50 ft. W. of E. line....	1914	646	513	Guelph	340 450	Clinton... Whirlpool	221	115	35	
18	8	T. Berry No. 1	1,750 ft. S. of N. line.... 100 ft. W. of E. line....		648	489	Guelph	327 430	Clinton... Whirlpool	87	165	28	
18	8	Dominion Natural Gas Co.... J. Mitchell	50 ft. N. of S. road.... 850 ft. E. of W. line....	1913	658	524	Guelph	345 467	Clinton... Whirlpool	246	176	63	Abandoned.
19	8	Dominion Natural Gas Co.... E. Young	100 ft. N. of S. road.... 800 ft. E. of W. line....	1913	647	509	Guelph	337 435	Clinton... Whirlpool	200	163	50	
20	8	Dominion Natural Gas Co.... D. W. Nicol	2,000 ft. S. of N. line.... 950 ft. E. of W. line....	1913	634	495	Guelph	331 440	Clinton... Whirlpool	90	172	27	
20	8	Dominion Natural Gas Co.... Geo. Mitchell	100 ft. N. of S. road.... 800 ft. W. of E. line.	1913	656	453						64	

21	8	Dominion Natural Gas Co.... A. Spittel.....	850 ft. S. of N. line..... 150 ft. E. of W. line.	1921	658	533	Guelph...	.....	.....	40	125	92	
21	8	Dominion Natural Gas Co.... R. Moffat No. 1.....	100 ft. N. of S. road..... 600 ft. E. of W. line.....	1913	651	518	Guelph...	340 450	Clinton... Whirlpool	15	175	56	
22	8	Dominion Natural Gas Co.... Johnston.	NW. Corner.....	1913	650	509	Guelph...	450	Whirlpool	39	156	57	
22	8	Dominion Natural Gas Co.... A. Corliss.....	1,600 ft. N. of S. road..... 150 ft. E. of W. road.	1913	624	427	Guelph...	.....	.....	221	.....	31	Abandoned.
23	8	Dominion Natural Gas Co.... Wm. Arthur.....	100 ft. N. of S. road..... 850 ft. E. of W. line.	1913	639	455	Guelph...	.....	.....	Dry hole.	.....	48	
24	8	Dominion Natural Gas Co.... H. Hall.	NE. Corner.....	1913	634	497	Guelph...	320 340	Clinton... Grimsby	39	142	45	
24	8	G. Hall.....	SE. Corner.....	1913	632	522	Guelph...	.....	.....	92	.....	42	
26	8	Dominion Natural Gas Co.... Clayton.....	2,200 ft. N. of S. line..... 450 ft. E. of W. line.	.....	614	459	Guelph...	.....	.....	60	.....	23	
27	8	Dominion Natural Gas Co.... J. Degrew.....	100 ft. N. of S. road..... 550 ft. E. of W. line.	1913	623	480	Guelph...	.....	.....	96	.....	13	
28	8	A. Degrew.....	SW. Corner.....	1913	608	511	Guelph...	435	Whirlpool	61	154	36	
30	8	Dominion Natural Gas Co.... W. Turner.....	1,200 ft. S. of N. road..... 10 ft. E. of W. line.....	1919	652	500	Guelph...	350 440	Clinton... Whirlpool	.....	114	60	
30	8	Dominion Natural Gas Co.... Etta Wilcox.....	2,100 ft. S. of N. road..... 750 ft. E. of W. line.	1919	648	451	Guelph...	.....	.....	43	.....	0	
31	8	Dominion Natural Gas Co.... David Bell.....	1,900 ft. S. of N. road..... 50 ft. E. of W. road.	1919	642	443	Guelph...	.....	.....	25	.....	0	
32	8	Dominion Natural Gas Co.... J. Berry.	SW. Corner.....	1913	640	502	Guelph...	327 433	Clinton... Whirlpool	.....	182	61	
17	9	G. Berry No. 1.....	100 ft. N. of S. road..... 700 ft. W. of E. line.....	1913	662	522	Salina....	350 470	Clinton... Whirlpool	192	165	67	
17	9	Security Gas Co..... G. Berry No. 3.....	100 ft. N. of S. road..... 1,000 ft. E. of W. road.	1934	660	509	Salina....	489	Whirlpool	48	60	66	
18	9	Dominion Natural Gas Co.... G. Berry No. 2.....	100 ft. N. of S. road..... 900 ft. E. of W. line.....	1914	660	525	Guelph...	356 462	Clinton... Whirlpool	.....	.....	66	Abandoned.
18	9	Wm. Berry No. 1.....	NE. Corner.....	1913	650	520	Guelph...	.....	.....	.....	.....	71	
18	9	Wm. Berry No. 2.....	900 ft. S. of N. road..... 200 ft. W. of E. line.	1913	665	507	Guelph...	.....	.....	.....	.....	53	Abandoned.

Wells in Binbrook Township, Wentworth County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
19	9	Dominion Natural Gas Co....	100 ft. N. of S. road.....	.....	645	542	Guelph...	.....	Clinton...	90	.....	63	
		E. Young No. 2.....	700 ft. W. of E. line.....	.....	.....	.....	.....	.....	Whirlpool				
20	9	E. Young No. 1.....	NW. Corner.....	.....	647	500	Guelph...	335	Clinton...	190	160	54	
								438	Whirlpool				
21	9	Dominion Natural Gas Co....	1,000 ft. N. of S. road.....	.....	636	.....	Guelph...	.....	.....	.....	.....	.....	
		Hall.....	100 ft. E. of W. line.										
22	9	Peninsula Gas Co.....	550 ft. S. of N. road.....	1932	642	496	Guelph...	.....	.....	Dry hole.	.....	56	Fresh water at 60 ft.
		J. Rose No. 1.....	150 ft. W. of E. road.										Salt water at 210 ft.
22	9	J. Rose No. 2.....	650 ft. N. of S. road.....	.....	626	.....	Guelph...	.....	.....	.....	.....	.....	
			50 ft. W. of E. road.										
24	9	Dominion Natural Gas Co....	1,600 ft. S. of N. road.....	1913	623	492	Guelph...	320	Clinton...	18	180	38	Abandoned.
		G. Mitchell.....	350 ft. E. of W. line.....	.....	.....	.....	.....	436	Whirlpool				
24	9	Trimble.....	1,500 ft. N. of S. road.....	.....	618	.....	Guelph...	.....	.....	.....	.....	.....	
			150 ft. W. of E. road.										
26	9	Dominion Natural Gas Co....	1,700 ft. S. of N. road.....	1912	620	486	Guelph...	.....	.....	95	.....	35	
		T. Gawley.....	25 ft. E. of W. line.										
27	9	Continental Gas Co. No. 3....	500 ft. N. of S. line.....	1931	620	534	Guelph...	353	Clinton...	33	.....	43	Fresh water at 60 ft.
			300 ft. W. of E. line.....	.....	.....	.....	.....	487	Whirlpool				Black water at 150 ft.
29	9	Continental Gas Co. No. 4....	1,500 ft. N. of S. line.....	1931	637	537	Guelph...	377	Grimsby.	25	.....	49	Fresh water at 60 ft.
			850 ft. W. of E. line.....	.....	.....	.....	.....	491	Whirlpool				Black water at 130 ft.
28	9	Continental Gas Co. No. 1....	1,700 ft. N. of S. line.....	1931	623	553	Guelph...	341	Clinton...	30	90	59	Fresh water at 63 ft.
			450 ft. W. of E. line.....	.....	.....	.....	.....	486	Whirlpool				Black water at 240 ft.
28	9	Continental Gas Co. No. 2....	1,250 ft. N. of S. line.....	1931	629	531	Guelph...	337	Clinton...	30	.....	54	Fresh water at 53 ft.
			700 ft. E. of W. line.....	.....	.....	.....	.....	482	Whirlpool				Sulphur water at 213 ft.
29	9	Dominion Natural Gas Co....	1,600 ft. S. of N. road.....	1913	621	499	Guelph...	322	Clinton...	131	168	51	
		J. Wilcox.....	400 ft. W. of E. line.....	.....	.....	.....	.....	436	Whirlpool				

29	9	Continental Gas Co..... D. Salmon No. 1.....	1,600 ft. N. of S. line..... 700 ft. E. of W. line.....	1931	621	533	Guelph...	343 474	Clinton... Whirlpool	75	90	49	
29	9	D. Salmon No. 2.....	1,500 ft. N. of S. line..... 100 ft. W. of E. line.....	1931	603	520	Guelph...	360 485	Grimsby. Whirlpool	35	90	36	Fresh water at 40 ft. Black water at 200 ft.
29	9	D. Salmon No. 3.....	550 ft. N. of S. line..... 100 ft. W. of E. line.....	1931	605	527	Salina....	377 492	Grimsby. Whirlpool	34	90	40	Fresh water at 50 ft. Black water at 200 ft.
29	9	D. Salmon No. 4.....	550 ft. N. of S. line..... 850 ft. E. of W. line.....	1931	606	538	Salina....	350 493	Clinton... Whirlpool	33	90	42	Fresh water at 50 ft. Black water at 220 ft.
29	9	D. Salmon No. 5.....	850 ft. N. of S. line..... 100 ft. E. of W. line.....	1931	618	538	Salina....	359 383 505	Clinton... Grimsby Whirlpool	35	92	50	Fresh water at 55 ft. Black water at 235 ft.
30	9	Continental Gas Co..... Hewitt Bros. No. 1.....	450 ft. N. of S. line..... 600 ft. E. of W. line.....	1932	603	531	Salina....	353 383 481	Clinton... Grimsby Whirlpool	15	75	37	
30	9	Hewitt Bros. No. 2.....	1,350 ft. N. of S. line..... 600 ft. W. of E. line.....	1932	620	541	Salina....	333 387 502	Clinton... Grimsby Whirlpool	22	100	48	Fresh water at 38 ft. Black water at 220 ft.
30	9	Hewitt Bros No. 3.....	1,800 ft. S. of N. road..... 50 ft. W. of E. line.....	1932	629	534	Guelph...	372 494	Grimsby. Whirlpool	55	122	47	Fresh water at 50 ft. Black water at 190 ft.
30	9	Hewitt Bros. No. 4.....	2,000 ft. S. of N. road..... 700 ft. W. of E. line.....	1932	626	534	Guelph...	334 371 493	Clinton... Grimsby Whirlpool	35	110	44	Fresh water at 50 ft. Black water at 150 ft.
30	9	Dominion Natural Gas Co.... Fred Eling.....	1,100 ft. S. of N. road..... 100 ft. E. of W. line.	1934	606	491	Guelph...	.....	.....	.....	.....	26	Abandoned.
31	9	Dominion Natural Gas Co.... J. R. Hewitt.....	100 ft. N. of S. road..... 700 ft. E. of W. line.....	1913	604	488	Guelph...	317 434	Clinton... Whirlpool	.....	190	54	
32	9	Dominion Natural Gas Co.... J. Berry.....	100 ft. S. of N. road..... 450 ft. W. of E. line.....	1913	639	496	Guelph...	316 440	Clinton... Whirlpool	110	182	68	
33	9	Dominion Natural Gas Co.... H. Culp No. 1.	SE. Corner.....	1913	610	500	Guelph...	327½ 445	Clinton... Whirlpool	110	192	50	
27	10	Dominion Natural Gas Co.... Wm. Beattie.....	50 ft. N. of S. road..... 1,100 ft. W. of E. line.....	1913	609	515	Guelph...	320 445	Clinton... Whirlpool	35	172	36	
29	10	Dominion Natural Gas Co.... J. Muir.....	NW. Corner.....	1913	603	501	Guelph...	365 446	Grimsby. Whirlpool	92	163	40	
31	10	C. A. Hewitt No. 1.....	450 ft. S. of N. road..... 400 ft. W. of E. line.	1935	600	515	Salina....	470	Whirlpool	10	70	47	Fresh water at 50 ft., rises 30 ft.
31	10	Jas. Hewitt No. 1.....	100 ft. N. of S. road..... 550 ft. E. of W. line.	.....	615	527	Salina....	.....	.....	Dry hole.	.....	61	

Wells in Binbrook Township, Wentworth County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
33	10	Dominion Natural Gas Co.... G. Kingsboro.....	600 ft. S. of N. road..... 200 ft. W. of E. road.....	1913	590	500	Salina....	330 447	Clinton... Whirlpool	87	170	37	
31	8	O. Bell.....	50 ft. W. of E. line..... 2,450 ft. S. of N. road.	1937	643	495	Salina....	443	Whirlpool	36	50	50	Fresh water at 60 ft.
22	9	Wray Patterson.....	120 ft. W. of E. road..... 75 ft. N. of S. road.	1937	647	500	Salina....	462	Whirlpool	30	60	45	Fresh water at 60 ft.

Wells in Glanford Township, Wentworth County

10	4	Dominion Natural Gas Co.... C. Hostein.....	1,200 ft. S. of N. road..... 100 ft. W. of E. road.	1928	721	313	Guelph...	313	Clinton...	4	.....	60	
10	5	Dominion Natural Gas Co.... J. Bates.....	650 ft. N. of S. road..... 350 ft. W. of E. road.	1928	745	384	Guelph...	.....	.....	.....	.....	104	Abandoned. Fresh water at 104 ft. Salt water at 368 ft.
6	6	Dominion Natural Gas Co.... J. Brooks.....	650 ft. N. of S. road..... 50 ft. E. of W. road.	1928	684	315	Guelph...	315	Clinton...	7	.....	83	Abandoned.
12	6	Dominion Natural Gas Co.... J. Nicols No. 1.....	900 ft. S. of N. road..... 100 ft. W. of E. line.	1928	733	470	Guelph...	352	Clinton...	1½	.....	128	Water at 132 and 180 ft.
16	6	Dominion Natural Gas Co.... E. Tisdale.	SW. Corner.....	1916	677	481	Guelph...	.....	.....	84	.....	75	
13	7	Wm. Bell.....	600 ft. E. of W. road..... 25 ft. N. of S. line.	.....	643	.....	Guelph...	.....	.....	.....	.....	.....	
14	7	Dominion Natural Gas Co.... A. Stewart.....	1,700 ft. S. of N. road..... 200 ft. E. of W. road.	1916	686	509	Guelph...	.....	.....	43	.....	67	
14	7	Dominion Natural Gas Co.... W. S. Jerome No. 1.....	300 ft. N. of S. line..... 25 ft. E. of W. line.....	1916	645	492	Guelph...	330 442	Clinton... Whirlpool	46	.....	44	

15	7	Dominion Natural Gas Co.... W. Hyslop No. 3.....	50 ft. S. of N. road..... 700 ft. E. of W. line.	1916	682	452	Guelph...	.....	.....	Dry hole.	.....	75	
15	7	W. Hyslop No. 2.....	2,400 ft. S. of N. road..... 300 ft. W. of E. road.....	1916	671	501	Guelph...	338 445	Clinton... Whirlpool	100	145	37	
15	7	W. Hyslop No. 1.....	100 ft. S. of N. line..... 300 ft. E. of W. line.....	1916	628	492	Guelph...	330 425	Clinton... Whirlpool	443	106	28	
16	7	Dominion Natural Gas Co.... F. MacPherson.....	750 ft. S. of N. road..... 50 ft. W. of E. road.	1914	680	464	Guelph...	430	Whirlpool	88	.....	70	
16	7	Dominion Natural Gas Co.... W. H. Lowden No. 1.....	2,400 ft. S. of N. road..... 100 ft. W. of E. road.....	....	673	468	Guelph...	315 420	Clinton... Whirlpool	270	174	38	
16	7	Dominion Natural Gas Co.... D. Davidson.	SW. Corner.....	1916	668	500	Guelph...	325 440	Clinton... Whirlpool	55	104	45	
12	8	Robt. Neale No. 2.....	2,100 ft. N. of S. road..... 600 ft. E. of W. line.....	1923	678	525	Guelph...	370 472	Clinton... Whirlpool	30	80	68	Fresh water at 160 ft.
14	8	D. Thompson.....	750 ft. S. of N. line..... 300 ft. E. of W. line.....	1923	641	480	Guelph...	408 423	Whirlpool	25 10	80	.....	
15	8	Dominion Natural Gas Co.... R. Walker No. 1.....	1,550 ft. S. of N. line..... 1,100 ft. W. of E. line.	1915	669	520	Guelph...	.....	.....	135	.....	60	
14	8	R. Walker No. 2.....	1,700 ft. S. of N. line..... 300 ft. W. of E. line.	1915	678	523	Guelph...	.....	.....	157	.....	74	
14	8	R. Walker No. 3.....	1,100 ft. N. of S. road..... 50 ft. W. of E. line.	1915	663	458	Guelph...	.....	.....	93	.....	65	
14	8	R. Walker No. 4.....	50 ft. S. of N. line..... 900 ft. W. of E. line.	1915	624	494	Guelph...	.....	.....	.....	.....	39	
16	8	Dominion Natural Gas Co.... Burke No. 1.....	1,700 ft. S. of N. line..... 800 ft. W. of E. road.	1914	654	488	Guelph...	.....	.....	21	.....	34	
16	8	Dominion Natural Gas Co.... Carver and Hutty No. 3....	2,500 ft. S. of N. line..... 600 ft. E. of W. line.	1916	654	498	Guelph...	.....	.....	95	.....	39	Abandoned.
16	8	Carver and Hutty No. 4....	1,650 ft. S. of N. road..... 50 ft. E. of W. road.	1916	656	505	Guelph...	.....	.....	.....	.....	42	
15	9	Security Gas Co..... Logan No. 1.....	600 ft. S. of N. road..... 1,000 ft. W. of E. road.	1935	676	500	Salina....	446	Whirlpool	30	50	55	Fresh water at 60 ft. Sulphur water at 221 ft.
15	9	Security Gas Co..... Logan No. 2.	SE. Corner.....	1935	670	564	Salina....	450	Whirlpool	30	50	45	Fresh water at 80 ft. Sulphur water at 221 ft.
16	9	Dominion Natural Gas Co.... Carver and Hutty No. 1....	10 ft. S. of N. line..... 1,000 ft. W. of E. road.	1916	655	514	Guelph...	.....	.....	78	.....	50	

Wells in Glanford Township, Wentworth County—Continued

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. a sq. in.	Thickness of drift in feet	Remarks
16	9	Carver and Hutty No. 2....	50 ft. N. of S. road..... 1,100 ft. W. of E. road.	1916	670	535	Salina....	.....	.....	.....	.....	60	
16	9	Marshall.....	700 ft. N. of S. road..... 450 ft. W. of E. road.	.....	666	.....	Salina....	.....	.....	.....	.....	.....	

Wells in Ancaster Township, Wentworth County

38	1	Valley Gas and Oil Co..... Gartstone No. 3.....	1,000 ft. N. of S. line..... 400 ft. E. of W. line.	1922	561	2,160	Guelph...	2,120	Black River.	.....	.....	65	Show of oil and gas.
19	4	Aloka Oil Co..... S. Beresford No. 1.....	1,000 ft. S. of highway.... 500 ft. E. of W. line.	1934	707	585	Guelph...	340	Clinton...	20	40	98	Fresh water at 105 and 125 ft. Sulphur water at 215 ft.
20	4	Premier Development Co..... Mrs. L. Curran No. 1.....	600 ft. S. of highway.... 650 ft. E. of W. line.....	1927	710	2,827	Guelph...	355 2,526	Clinton...	.....	.....	95	Show of gas in Clinton. Show of oil at 2,560 ft. Fresh water at 98 ft.

Wells in Beverly Township, Wentworth County

12	1	L. M. Thomson.....	3,200 ft. N. of S. road..... 600 ft. W. of E. road.	1896	751	305	.....	.....	.....	.....	.....	150	
28	1	Valley Gas and Oil Co..... H. Yeoman.....	150 ft. N. of S. road..... 450 ft. W. of E. line.	1921	738	763	Guelph...	.....	.....	.....	.....	.....	
1	3	Rockton Oil and Gas Syndicate. H. Smith No. 2.	700 ft. S. of N. road..... 200 ft. E. of W. road.	1935	766	1,745+	Guelph...	.....	.....	.....	.....	.....	
30	4	Rockton Oil and Gas Syndicate.	NE. Corner.....	1936	820	2,675+	Guelph...	.....	.....	Dry hole.	.....	20	
18	5	Rockton Oil and Gas Syndicate No. 1	150 ft. N. of S. road..... 750 ft. W. of E. road.	1935	835	.....	.....	.....	.....	Dry hole.	.....	.....	

Wells in West Flamborough Township, Wentworth County

10	1	Valley Gas and Oil Co..... Woodley farm.....	3,200 ft. N. of S. road..... 400 ft. W. of E. line.	1924	442	2,123	Queenston..	.....	.....	.....	.....	231	Abandoned.

Wells in Barton Township, Wentworth County

17	5	.....	200 ft. S. of N. road..... 700 ft. W. of E. line.	1889	641	1,318	.....	.....	.....	.....	.....	.....	
1	7	Emerson Natural Gas.....	.....	1884	.....	1,500	.....	.....	.....	.....	.....	.....	
11	7	Barton Oil Co..... Hunt.....	600 ft. N. of S. road..... 100 ft. W. of E. road.	1865	666	873	.....	.....	.....	.....	.....	.....	
		Hamilton Natural Gas No. 2.	Clyde Ave., West Hamilton.	1894	.....	1,597	Queenston	.....	.....	.....	.....	.....	
		Hamilton Natural Gas No. 1.	Clyde Ave., West Hamilton.	1894	.....	1,950	Queenston	.....	.....	.....	.....	.....	
		Royal Hotel.....	Merrick and James Streets, Hamilton.	1889	312	1,000	Queenston	.....	.....	.....	.....	.....	
		Queens Hotel.....	Burlington.....	.....	290	1,960	.....	.....	.....	.....	.....	.....	
		W. S. Wood.....	Bartonville.....	1890	.....	140	.....	.....	.....	.....	.....	.....	

Wells in Caledon Township, Peel County

6	1 W.C.R.	Dover Oil Co..... J. Graham No. 1.	.....	1922	904	1,449	Queenston	553	Dundas...	475	.....	141	
4	1 W.C.R.	University of Toronto..... Geo. Henry No. 4.....	1,000 ft. N. of S. road..... 2,400 ft. E. of W. road....	1927	933	605	Queenston	235 370 440 590	Meaford.. Dundas...	40	37	25	
5	1 W.C.R.	Dover Oil Co..... Geo. Henry No. 1.....	1,700 ft. N. of S. road..... 2,000 ft. E. of W. road....	1922	895	935	Queenston	204 285 375 555 935	Meaford.. Dundas Trenton	300	60	39	

Wells in Chinguacousy Township, Peel County

25	1	Campbell Cross Oil Syndicate	700 ft. S. of N. road..... 5,700 ft. E. of W. road.	1934	892	1,732	Queenston	.....	.....	.....	.....	100	Show of gas in Dundas at 555 ft. Fresh water at 103 ft. Mineral water at 1,732 ft.

Wells in Vaughan Township, York County

Lot	Con.	Designation	Location	Year drilled	Altitude in feet above sea-level	Depth in feet	Bedrock formation	Producing depth in feet	Producing formation	Yield Mcf.	Pressure in lbs. to sq. in.	Thickness of drift in feet	Remarks
11	3	John Ash Farm		1923	648	4,640	Dundas					198	Show of gas at 210, 415, 851 ft. Fresh water at 146 and 200 ft. Salt water at 1,700, 2,300, 2,700, 4,300 ft.
13	3	Sir Donald Mann		1933	694	2,900	Dundas					292	Drilled 1,727 ft. into the Precambrian.

York Township, York County

13	3	R. I. Henderson No. 1		1924	639	1,394	Dundas					233	Precambrian at 1,393 ft.

Wells in Nassagaweya Township, Halton County

3	7	R. Boyd	On property of Mr. Transom, Milton Heights.		706	1,900	Queenston	1,710 1,725	Trenton	5		63	
3	7	R. Boyd	On property of Cooksville Brick and Tile Co., Milton Heights.		711	368	Queenston						
30	7	Suburban Gas Co. T. Synuck.		1929	1,110	2,445	Guelph-Lockport					38	Show of gas in pre-Trenton at 1,980 ft. Fresh water at 60 ft. Sulphur water at 160 ft.

Wells in Trafalgar Township, Halton County

14	2	Greenles Bros	800 ft. NW. of C.P.R. Station, Milton.		644	1,700	Queenston	1,610 1,620	Trenton			58	Flow of gas sufficient for three families struck at 1,610 to 1,620 ft.
10	1		On property of Mr. J. Allan Dixon.		617	406	Queenston			Dry hole.		47	

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CANADA

DEPARTMENT OF MINES AND RESOURCES

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BUREAU OF GEOLOGY AND TOPOGRAPHY

GEOLOGICAL SURVEY

MAP 585A

PART OF

NIAGARA PENINSULA, ONTARIO

SHOWING STRUCTURE CONTOURS DRAWN ON TOP OF THE CLINTON FORMATION AND POSITIONS OF WELLS DRILLED TO OBTAIN NATURAL GAS

Scale, 126720 or 1 Inch to 2 Miles

Miles 2 0 2 4 6

LEGEND

Structure contour on top of Clinton formation (Interval 20 feet above and below sea-level)

Well with initial yield of natural gas of commercial quantity •

Well either dry or with initial yield of natural gas not of commercial quantity ☆

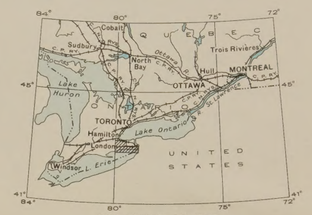
Well for which information is lacking as to whether natural gas in commercial quantity was or was not produced ×

International boundary

County boundary

Township boundary

Base-map prepared by the Topographical Survey, 1939, from published Federal Government maps. Cartography by the Drafting and Reproducing Division, 1940.



SCALE, 1 INCH TO 200 MILES

LAKE ONTARIO

BARTON

SALTFLEET

NORTH GRIMSBY

LANCASTER

GLANFORD

BINBROOK

SOUTH GRIMSBY

Twenty Mile Cr.

WENTWORTH COUNTY
HALDIMAND COUNTY

WENTWORTH COUNTY
LINCOLN COUNTY

Grand River

CAISTOR

Welland River

GAINSBOROUGH

SENECA

ONEIDA

CANBOROUGH

CAYUGA

NORTH

SOUTH CAYUGA

DUNN

MOULTON

WAINFLEET

WELLAND COUNTY
HALDIMAND COUNTY

Feeder Canal

SHERBROOKE

PELHAM

Welland River

CROWLAND

WELLAND CANAL

WILLOUGHBY

HUMBERSTONE

BERTIE

Niagara River

Lighthouses

CANADA
UNITED STATES

LAKE ERIE

80°00' PUBLISHED, 1940.

To illustrate Memoir No. 224, "Palaeozoic Geology of the Toronto-Hamilton Area, Ontario," by J. F. Caley.

CANADA

DEPARTMENT OF MINES AND RESOURCES

MINES AND GEOLOGY BRANCH

BUREAU OF GEOLOGY AND TOPOGRAPHY

GEOLOGICAL SURVEY

LEGEND

PALAEOZOIC

DEVONIAN

11 — *ONONDAGA FORMATION: grey to blue, cherty limestone*

10 — *ORISKANY FORMATION: light grey sandstone*

SILURIAN

9 — *BERTIE-AKRON SERIES: argillaceous dolomite*

8 — *SALINA FORMATION: calcareous shale, argillaceous dolomite, gypsum*

7 — *GUELPH FORMATION: grey, buff, and brown dolomite*

6 — *LOCKPORT FORMATION: light grey dolomite; some brownish bituminous dolomite at top*

5 — *ROCHESTER FORMATION: dark grey shale*
CLINTON FORMATION: light grey dolomitic limestone; some grey shale
MEDINA FORMATION: white, grey, and red sandstone; red, green and grey shale; argillaceous limestone

ORDOVICIAN

4 — *QUEENSTON FORMATION: red, in part sandy, shale*

3 — *MEAFORD FORMATION: grey, bluish and brownish shale with thin layers of limestone, calcareous sandstone and arenaceous shale*

2 — *DUNDAS FORMATION: grey and blue shale; thin sandy beds; thin lenticular limestone beds*

1 — *BILLINGS FORMATION: dark grey to nearly black slightly bituminous shale*

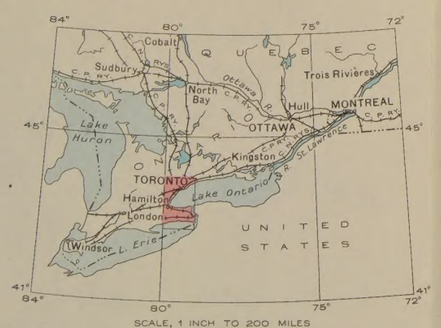
NOTE A: Thick mantle of glacial drift with complete absence of both rock outcrops and bore-holes penetrating bed rock prohibit placing of the Billings-Dundas contact.

Geological boundary (defined, approximate, assumed)
Quarry
Rock outcrop

Road well travelled
International boundary
County boundary
Township boundary
Indian Reserve boundary
Intermittent stream
Wharf or breakwater
Marsh
Contours (interval 100 feet)
Depression contour
Height in feet above Mean sea-level 246′

Geology by J. F. Caley, 1936, 1937.

Base-map prepared by the Topographical Survey, 1939, from Federal Government maps published in 1930, 1936, and 1938. Cartography by the Drafting and Reproducing Division, 1940.



SCALE, 1 INCH TO 200 MILES

80°00′ 45′ 30′ 15′ 79°00′ — 44°00′ — 43°00′ — 42°45′

PUBLISHED, 1941.

MAP 584A

TORONTO-HAMILTON

ONTARIO

Scale, 1/253440 or 1 Inch to 4 Miles

Miles 0 4 8 12

Approximate magnetic declination, 7°30′ to 8°30′ West.

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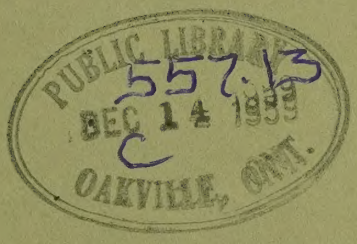

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